ECHNOLOGY DEPT.

JUNE 1, 1957

Telephone Engineer

AND MANAGEMENT

THE NATIONAL TELEPHONE MAGAZINE

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V.61 - #11

FEATURING IN THIS ISSUE

★ **PROFITS AND SERVICE THROUGH BETTER MANAGEMENT,** *by J. L. Morrison*

★ **A MAGNETIC AMPLIFIER CONTROLLED CHARGER,** *by Eugene H. Clark*

★ **TRAFFIC GIRLS STAGE HAZARD HUNT,** *by Rita Walby*

★ **QUESTIONS & ANSWERS — "Proving The Decibel Formula"**

is a big spread a good spread?

Not for him! But definitely yes when you're talking about rising costs and profit margins. So if your directory is off the straight and narrow, blaze a trail to our Complete Directory Service Plan.

We completely handle the directories of independent telephone companies in 4400 communities today . . . and show them larger revenues than they thought possible.

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REYNOLDS ALUMINUM OUTDOOR TELEPHONE BOOTH

It goes where business is!

Easy to Move, Easy to Set Up The lightweight portability of Reynolds aluminum telephone booths means you can extend service *where* the extra revenue *is!* These well-lighted, perfectly ventilated outdoor booths increase business because they invite it — with their cheery, easy-to-see and easy-to-locate features! And they're "open for business" 24 hours a day — *every* day.

Extra Convenience for Customers Reynolds Aluminum Outdoor Telephone Booths provide more comfort, more roominess inside—ample package shelf—tip-up directory at finger's reach — excellent louver-type ventilation. But most important—the out-in-the-open accessibility encourages frequent use, *additional* paystation business when in-store booths are unavailable at night, weekends or holidays.

Get All the Profit-Making Facts on lightweight, yet durable and rigid Reynolds Aluminum Outdoor Telephone Booths. Unlike wood, sturdy aluminum is easily cleaned of surface marks—*never* rots, rusts, decays. Fireproof, too! And so easy to maintain. Weigh only 360 lbs. erected. Write for complete specifications and business-building data today.

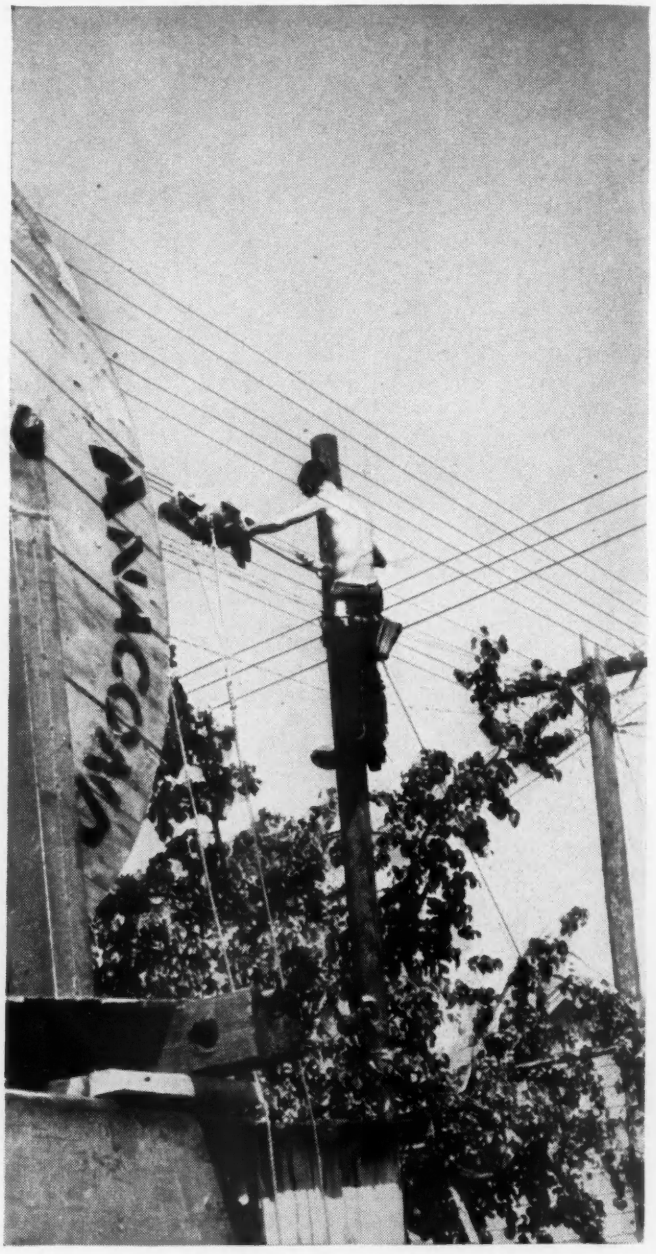
Address: Reynolds Aluminum Fabricating Service, 2000 South Ninth Street, Louisville 1, Kentucky.

The Finest Products Made with Aluminum are made with REYNOLDS ALUMINUM

East . . .

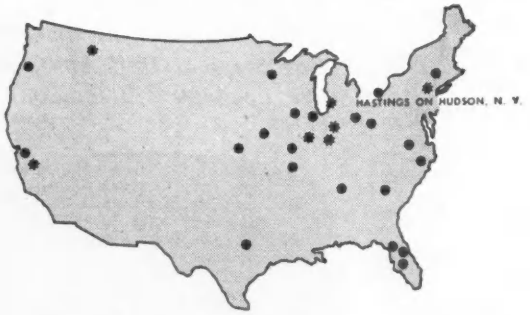
Atlantic Coast—Anaconda direct-burial telephone cable proves its toughness against corrosive soil conditions, moisture.

West . . .



Far West—Anaconda plastic aerial cable handles easily, is quickly installed.

Everywhere—Anaconda offers "on



Complete stock of standard items is maintained at Hastings and by Anaconda's distributors across the country. It's sold to telephone companies only by authorized telephone distributors.

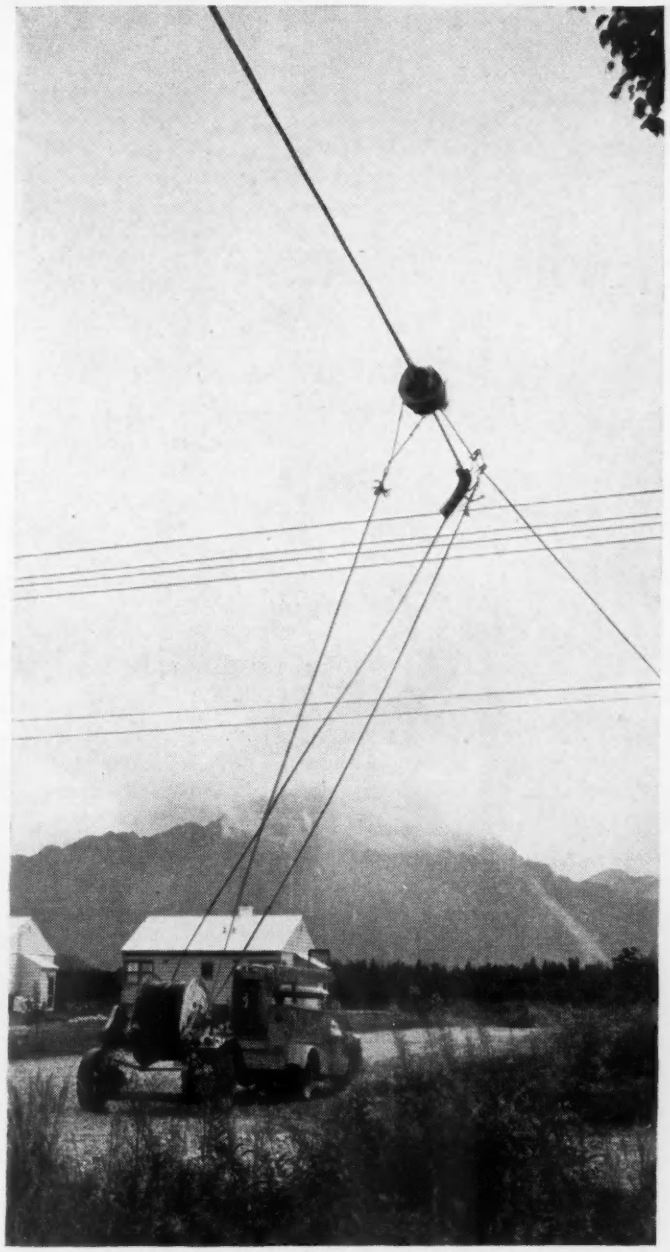
What's your need? Prompt service? A helping hand with cable selection? Application assistance? The answer to a special engineering question?

For any of these, see the Man from Anaconda!

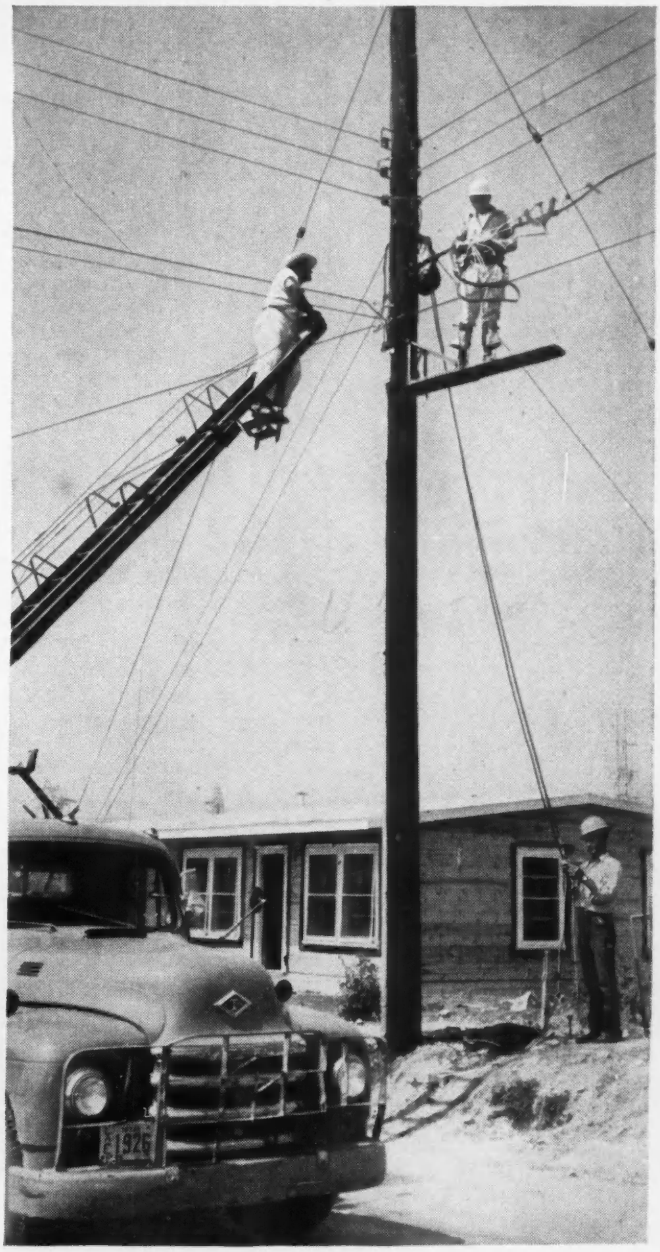
Anaconda's seven mills strategically located across the country, backing a national network of distributors, assure you prompt, accurate service—cable or wire *when* and *where* you want it.

At Anaconda, too, extensive research facilities are devoted, around the clock, to many of your cable problems. Anaconda is always ready and will-

North . . . South



Alaska—Anaconda telephone cable stands up, where temperatures really go down.



Deep South—under blazing sun, Anaconda plastic telephone cable is installed for long-life service.

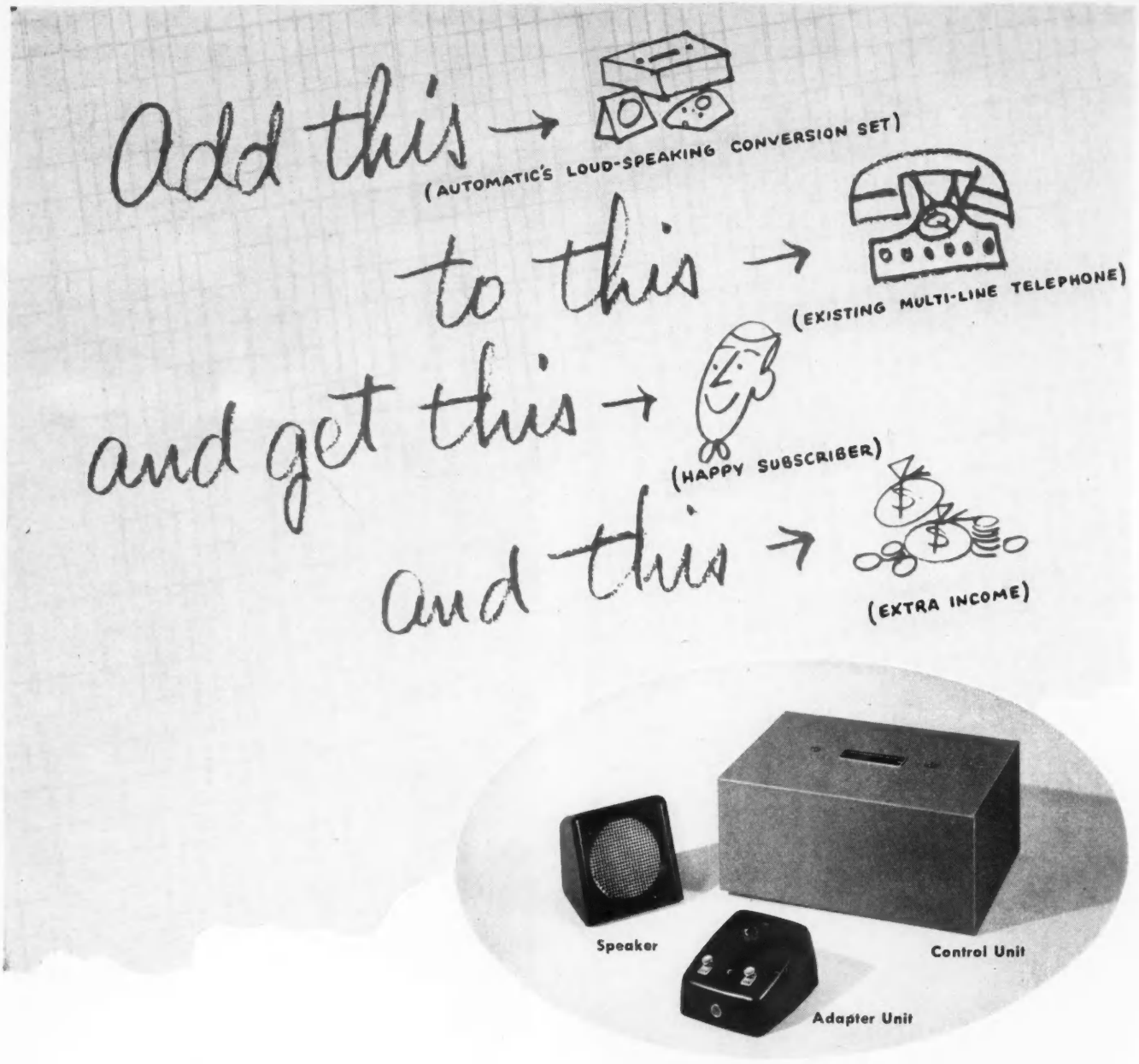
call" service for telephone cable

ing to share the answers with you. In manufacture, quality-control procedures insure finest products!

On your next job—ask the Man from Anaconda or your Anaconda distributor for Anaconda cable: plastic aerial, direct burial or self-supporting cable, urban and rural distribution wire, or paper-lead telephone cable. Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y. 57332

SEE THE MAN FROM **ANACONDA®**

FOR **TELEPHONE CABLE**



Almost any busy keyset telephone user would like loud-speaking service, too! He can have just that with, *and only with*, Automatic's Loud-Speaking Conversion Set. This handy set actually enables you to add loud-speaking service to an existing multi-line telephone quickly, easily. Result: the utmost in telephone convenience—and a sure way to added income.

Three separate units make up the Conversion Set: a Control Unit, a Speaker and an Adapter Unit, which has "On" and "Off" buttons, volume control, light signal, and microphone.

Get to know all about Automatic's Loud-Speaking Conversion Set now! Write for Circular 1867. Address:

Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7. Or call HAymarket 1-4300.

AUTOMATIC ELECTRIC

A member of the General Telephone System • One of America's great communications systems

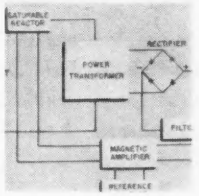
GENERAL TELEPHONE SYSTEM

Better Management 31

What are the problems of an expanding organization? This article points up some of the problems and emphasizes that coordination — the synchronizing and combining of actions and efforts of a group of people in pursuit of a common objective is a subject which demands an increasing amount of attention as an organization grows.

Magnetic Controlled Charger 37

The two major causes of battery failure are over-charging and under-charging of the battery. This article describes a magnetic amplifier controlled charger and points out that the life of a battery maintained on float voltage at its proper cell ratings may exceed 18 years.



Hazard Hunt 44

For Safety's Sake, Michigan Bell's Traffic Girls are on a "Hazard Hunt." The hunt, conducted as part of the company's program of encouraging employes to "think safety and do it safely," is proving in as one sure method of discovering hazards before they cause mishaps and injuries.

New Products 64

In this issue our New Products' editor reports on: (1) a new, light line-construction body; (2) a new pole preservative that promises prolonged service life for poles; and (3) radiation proof coaxial cables, one third smaller in size and proportionately lighter weight than other electrically equivalent cables.

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AND MANAGEMENT

THE NATIONAL TELEPHONE MAGAZINE

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FRONT COVER

INDIANA'S MERIT AWARD WINNER: Congratulating PAUL WOLF, Logansport, Switchman, General Telephone Co. of Indiana, Inc., is Association President FRANCIS SIMPSON, Winchester; Wolf; L. H. MEYER, president, General Telephone Co. of Indiana, Inc.; DON E. VAN FLEIT, Garrett, manager, Garrett Telephone Co. Wolf saved the lives of four young people at Lake Maxinkuckee, Ind., on June 24, 1956, and was awarded the 1957 Association Merit Award for "multiple heroism above and beyond the call of duty."

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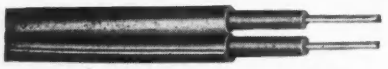
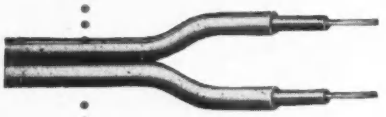
ENDURPRENE
Drop Wires



Twisted Pair

Parallel Reinforced



Parallel Figure 8

for LONGER Service Life!

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COMING CONVENTIONS

PENNSYLVANIA Independent Telephone Association, Buck Hill Falls Inn, Buck Hill Falls, June 4-5.

MAINE Telephone Association, **NEW HAMPSHIRE** Telephone Association, and **VERMONT** Telephone Association, Wentworth-by-the-Sea Hotel, Portsmouth, N. H., June 4-6.

CALIFORNIA Independent Telephone Association, Ambassador Hotel, Los Angeles, June 5-6-7.

WASHINGTON Independent Telephone Association, and **OREGON** Independent Telephone Association, Davenport Hotel, Spokane, Wash., June 13-14-15.

NEW YORK State Telephone Association, Scaroon Manor, Schroon Lake, June 17-19.

ALASKA Independent Telephone Association, Elks Club, Kodiak, Aug. 26-28.

TENNESSEE Telephone Association, Hermitage Hotel, Nashville, Sept. 12-13.

ARKANSAS Telephone Association, Arlington Hotel, Hot Springs, Sept. 16-17.

MICHIGAN Independent Telephone Association, Hotel Pantlind, Grand Rapids, Sept. 17-19.

ROCKY MOUNTAIN Telephone Association, Hotel Utah, Salt Lake City, Sept. 18-20.

WEST VIRGINIA Independent Telephone Assn., Blackwater Lodge, Davis, Sept. 30-Oct. 1.

NORTH CAROLINA Independent Telephone Association, Carolina Hotel, Pinehurst, Oct. 3-4.

ALABAMA-MISSISSIPPI Telephone Association, Thomas Jefferson Hotel, Birmingham, Oct. 11-12.

UNITED STATES Independent Telephone Association, Conrad Hilton Hotel, Chicago, Oct. 14-16.

VIRGINIA Independent Telephone Association, Roanoke Hotel, Roanoke, Oct. 24-25.

SOUTH CAROLINA Independent Telephone Association, Clemson House, Clemson, Nov. 4-5.

GEORGIA Telephone Association, Radium Springs Hotel, Albany, Nov. 13-14.

OKLAHOMA Telephone Association, Huckins Hotel, Oklahoma City, Nov. 21-22.

FLORDIA Telephone Association, The Balmoral, Miami Beach, Dec. 2-3.

BIG HIT

AUTOMATIC'S "80-SERIES" PAYSTATIONS

Anyway you figure it, the new AUTELCO paystations will be a "box office" hit with users. One reason is they're in color—8 different colors, as well as black. Paystations in color are easier to see—and they actually add attractiveness to their surroundings.

Equally important: AUTELCO paystations now have all the famous Type 80 Telephone features. These include an easier-to-hold handset, moistureproof Koiled Kord and greatly improved true-to-life transmission.

Maybe you've already guessed that AUTELCO "80-series" paystations have what it takes to really boost revenue. For all the facts, plus full ordering information, write for Circular 1877. Address: *Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7. Or call HAymarket 1-4300.*

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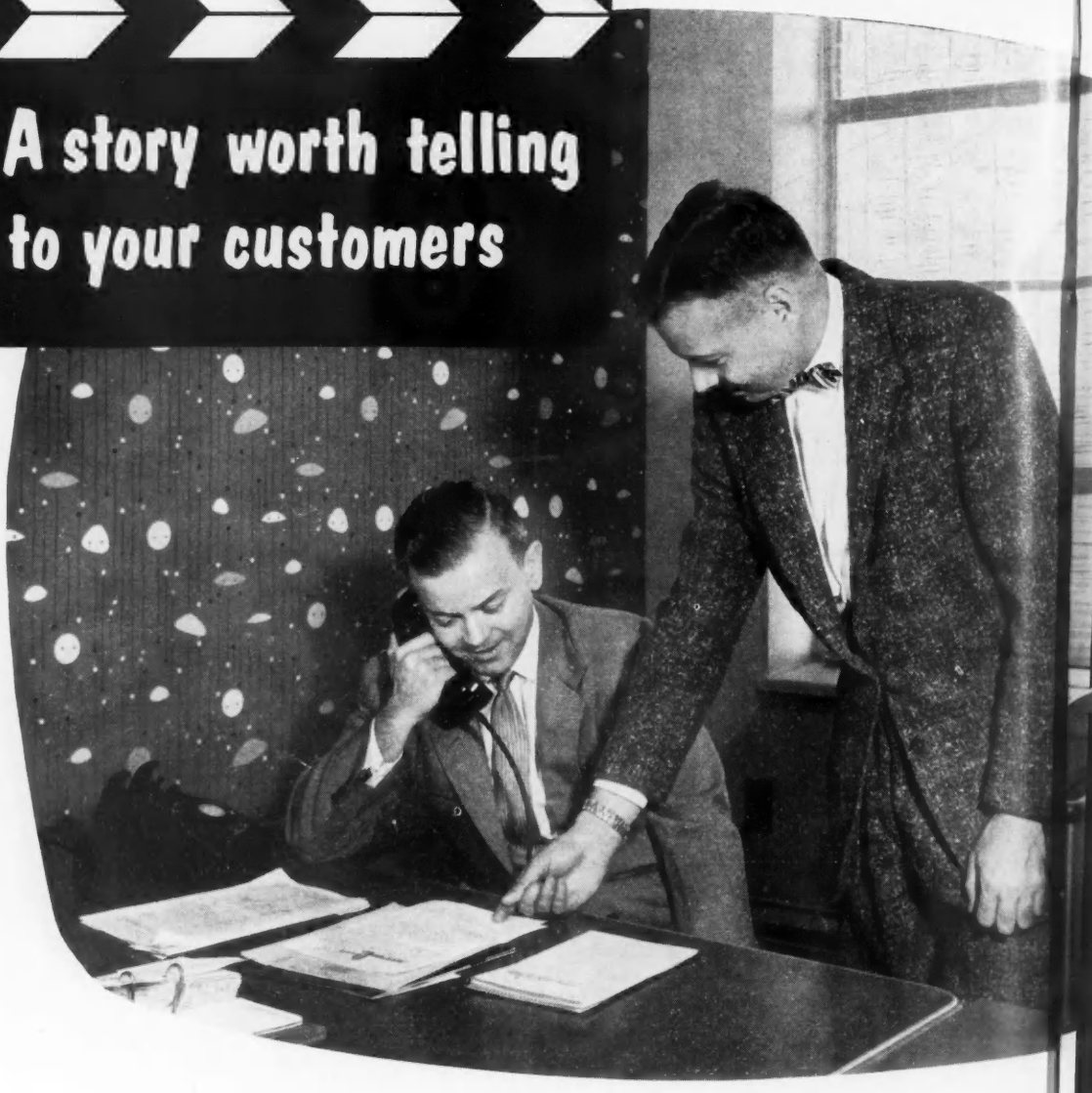
A member of the General Telephone System
One of America's great communications systems

GENERAL SYSTEM

SCENE 1
TAKE 3
SOUND 3

A story worth telling to your customers



Busy WREX-TV, CBS-ABC station in Rockford, Ill., needed a telephone system that could handle several types of calls with quick efficiency. Robert Mathews (right), manager of the General Telephone Co. in Belvidere, Ill., talked the problem over with WREX-TV's merchandising manager, Rollie Spongberg. This is what he found.

With a TV audience of over 1,000,000 the station switchboard was often a busy place. For example, there were plenty of incoming telephone calls when programs were occasionally interrupted by picture trouble, or when schedules were altered.

Quick intercommunication was important, too. When sudden program changes were made, engineers and others had to know right away.

And, of course, outgoing calls had to be made easily.

Mr. Mathews recommended the versatile Leich 40A PABX. On the opposite page are the reasons why—and the happy result.

If you'd like to tell your customers the story of Leich's 40A PABX, we'd be glad to send you our catalog. Write today.

LEICH

LEICH SALES CORPORATION, 427 WEST RANDOLPH STREET, CHICAGO 6, ILLI

How **Leich's New 40A PABX** Gave Busy WREX-TV Exactly What It Needed....

versatile, fast communications

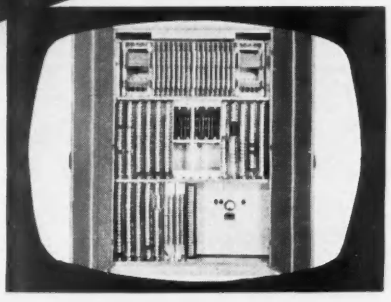
1. **Leich's Exclusive Keyset Turret.** When WREX-TV's attendant receives an incoming city trunk call, she can extend it quickly. She merely presses two keyset buttons in sequence. Callers are seldom, if ever, kept waiting by a busy attendant.

On consultation calls it isn't even necessary for the attendant to connect you. Just depress the telephone's hookswitch lever momentarily, then dial. You can hold a trunk call or transfer it without assistance from the operator.

2. **Standard Leich dial telephones** are used to give quick, easy service on both inside and outgoing calls.

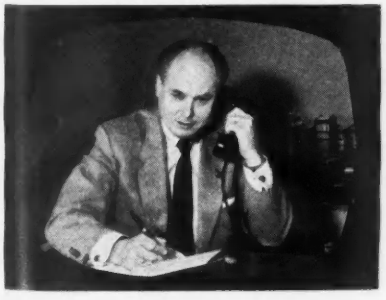
One inside telephone can reach another inside party, like the TV engineer shown here, by dialing his two digit number. That's all.

Any inside station can call outside without waiting for the attendant. By simply dialing the digit 9, or 0, the inside party is connected to the main exchange. He can then dial, or give the number to the main exchange operator as the case might be.



3. **The Leich 40A PABX switchboard** is modeled after the famous Leich Dial System. It offers dependable, all-relay switching in a modern, compact cabinet. It can be installed in a room as small as 6 feet by 6 feet. All the power equipment is contained in the cabinet.

The switchboard has a capacity of up to 40 telephones with 10 trunks to the main exchange, and 6 local links. Local links are not tied up on extension dialed calls to city trunks.

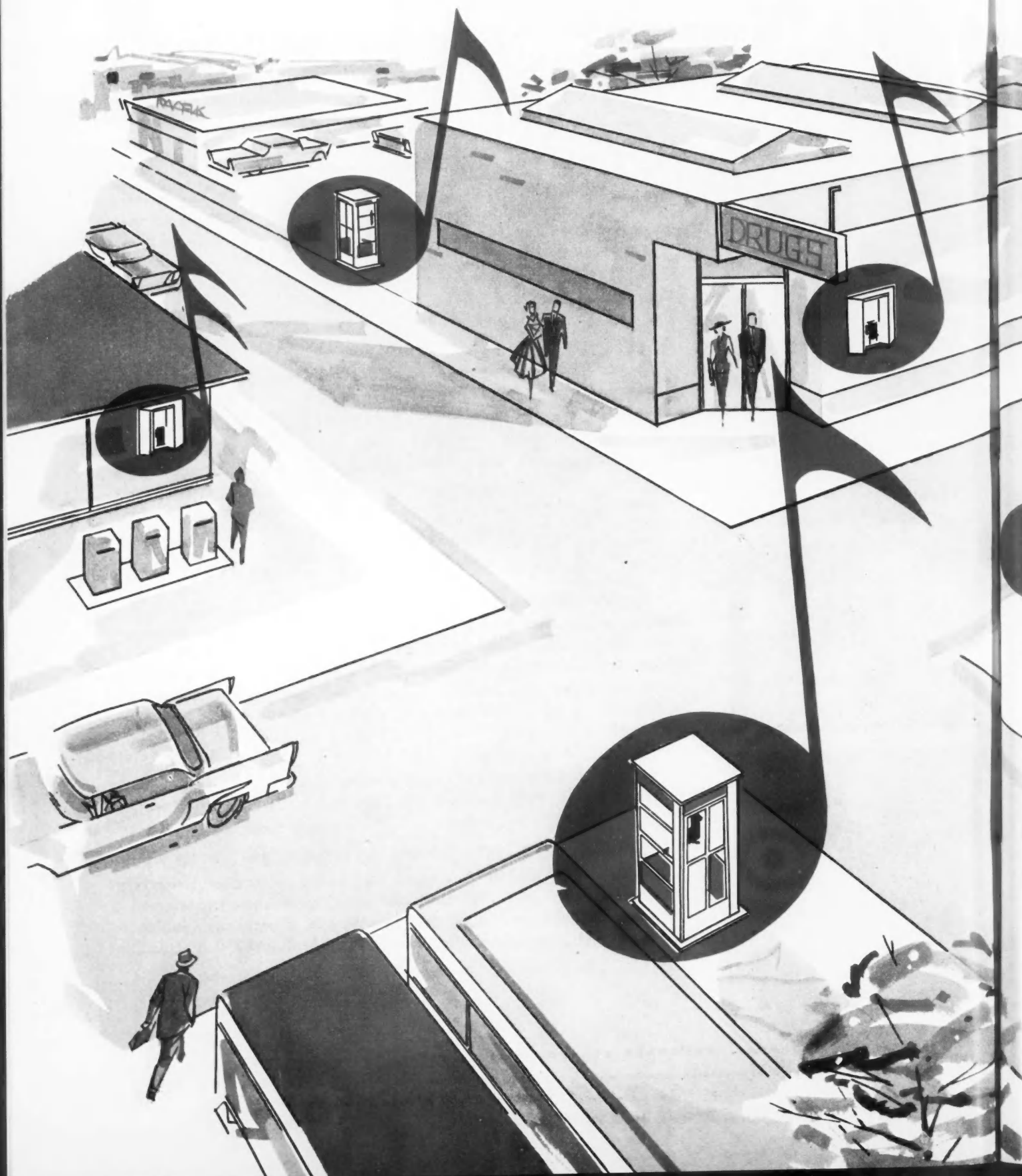


4. **The result:** Joe Baisch, General Manager of WREX-TV, says: "Our TV station has a close, personal contact with our viewing public, our advertisers, our networks, and agencies. Things happen FAST in television and we need telephone communication that offers us the utmost in efficiency and flexibility. We're very pleased with the service furnished by the Leich PABX switchboard."

ch anufacturers of telephones, switchboards and related apparatus since 1907

ILLING CIFIC COAST: 11401 WEST PICO BLVD., LOS ANGELES 64, CALIFORNIA SOUTHWEST: 1227 SLOCUM STREET, DALLAS 7, TEXAS

BOOTHS FROM AUTOMATIC



MAKE COIN BOXES JINGLE

Inside, outside, all around your town, these colorful, comfortable booths play a paystation tune that means increased revenue.

The new Alcoa Aluminum outdoor booth stands out in any environment—a constant reminder for people to call. The Burgess-Manning indoor booths take up a minimum of space, yet offer most of the advantages of booths twice their size. Both booths are easily kept sparkling clean, and give customers the privacy they prefer. They'll give *you* years of profit-producing service with minimum maintenance. Most important, they'll quickly pay for themselves, and start returning a maximum rate on your investment.

Automatic Electric offers you a wide selection of attractive booths for every location, available in a choice of colors and accessories. You'll find Paystation Booths in our new Cat. 9000; or, request Circular 1877 which also shows our complete line. Send your order for booths to your friendly Automatic Electric representative or your nearest A. E. Sales Corporation warehouse.

Automatic's 5 friendly warehouses:

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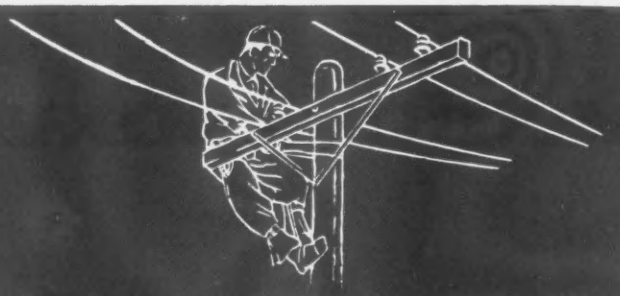
INDUSTRY NEWSLETTER



Foreign Attachment Tariff

THE BELL SYSTEM companies' revised foreign attachment provision tariff regulations, authorizing the use of voice silencers and other devices which serve the convenience of the customer without endangering telephone property, employes, or service, went into effect as filed Thursday, May 16. The tariff changes were filed in response to an FCC order which stemmed from a court decision reversing the Commission's earlier decision in the Hush-A-Phone case.

In an informational release announcing the new tariff, the Commission points out that "Although otherwise permitting the use of devices which may be inductively connected to the telephone facilities furnished by the companies, so long as they meet the above-quoted tests" — of not impairing or injuring safety, equipment, or operation — "the revised tariffs make no change in the existing regulations applicable to the use of telephone recording devices. Nor do the new regulations permit the interconnection of telephone company lines or channels with any other lines or channels except as presently providing in other tariff provisions."

It adds, "In a letter accompanying the revised tariffs, the Bell System companies state that they have examined the newest model of the Hush-A-Phone device which is designed for use with the '500' telephone set of the Bell System, and that it was found to have none of the effects prohibited by the new regulations. Thus, use of the new model, as well as the earlier models which were the subject of the proceedings in the hearing case appears to be permissible under the new regulations."

Bureau of Public Roads Issues Memo on Highway Location Expense

DRAFT OF A new memorandum of the Bureau of Public Roads covering reimbursement to public utilities for highway relocation expenses has been submitted to bureau field offices, state highway departments, utility companies, and utility associations for comment, and the many responses received are being considered in preparation of the new memorandum in final form, according to Clifton W. Enfield, General Counsel for the bureau.

In substance, the document "will provide that to the extent a state actually pays for the cost of relocation or adjustment of utility facilities, which payment is not contrary to state law or a contract between the utility and the state or a subdivision of the state, federal funds may reimburse the state for the cost of right-of-way, preliminary engineering, and construction necessary for the utility relocation."

Mr. Enfield commented that "It is not uncommon for highway construction to be delayed by failure of utilities to make timely relocation or adjustment of their facilities, nor is it uncommon for utilities to suffer inconvenience and interference because of highway construction."

As a result, he said, the bureau made a survey of the subject late last year in all states. Results of the survey, he reported, are that in about one-third of the states "highway construction progress is often seriously impeded by delay in utility adjustments," while it is occasionally a problem in another one-third, and the remaining states seldom have delays.

"It was found," he continued, "that delay in highway construction, because of utility relocation, resulted principally from (1) lack of adequate advance planning and investigation, (2) lack of adequate liaison between the highway agencies and the utility companies, (3) lack of early firm commitment by highway agencies in scheduling projects for advancement to construction, (4) failure to complete plans and acquire right-of-way sufficiently in advance of construction, (5) lack of adequate funds, personnel, and equipment on the part of utility companies, and (6) lack of adequate knowledge regarding location and nature of underground facilities."

He pointed out that "One of the most important and effective steps consistently taken in those states that have successfully solved the problem of utility adjustment is to arrange for conferences with representatives of the utility companies as soon as the location and plans for a highway project have been developed sufficiently to indicate approximately what utility adjustment will be required." This enables the utilities to make detailed studies of the matter, budget funds, acquire right-of-way, and line up materials and crews for the jobs, he commented.

Alaska Communications System

ENABLING legislation that would permit the army to sell the Alaska Communications System to a commercial company should be ready for submission

to Congress in Nov. of this year, House Appropriations Committee was told during hearings on the military budget, according to the hearing record related May 18. House committee was informed by an Army Signal Corps spokesman that "only . . . the commercial" portion of the system would be sold "on a negotiated bid or a straight-bid basis," and that at the present time there is one definite bidder, with the possibility that "two others will be interested in the purchase of the system." Information supplied to the committee shows that the value of the ACS plant as of Jan. 1, 1957, was $47,691,044, including both the civilian and military portions.

FCC OK's Amherst Request

PLANS OF the Rural Electrification Administration for unattended, automatic dial mobile and rural subscriber radiotelephone service, in the mill for at least two years, passed a major hurdle last month when the FCC issued its first authorization contemplating such an operation to the Central Virginia Telephone Corp., an REA telephone borrower at Amherst, Va. The Virginia installation, first of its kind, will enable mobile radio users and subscribers in rural points using fixed radio units to dial directly from the radio units into the landline telephone system through an unattended base radio station.

Becker Amendment Defeated

AGRICULTURE Appropriations Bill, including a reduction in President Eisenhower's budget request for administrative funds for the Rural Electrification Administration, was passed May 15. Voted down on a division tally by about a 2-1 margin was an amendment offered by Rep. Frank J. Becker (R., N. Y.), which would have knocked out the entire REA loan program. Rep. Becker said he was seeking a change in the REA program so that borrowers would pay the going rate of interest which the Treasury is spending in borrowing money, rather than a flat 2%.

Highlights

THE U. S. INDEPENDENT Telephone Association last month asked leave to intervene in FCC's hearing on proposed tariffs of AT&T Long Lines Department for leasing and maintenance of private mobile radio facilities. USITA filing preceded notice from FCC that General Services Administration has been granted leave to intervene. Hearings, meanwhile, have been postponed without date until several pending questions have been resolved by Commission, including petitions for modification of the hearing issues. . . . Cleo F. Craig, former AT&T President, resigned as AT&T Chairman of the Board, effective May 31. Mr. Craig will continue as member of Board and the Executive Commtitee, and thus will be available for consultation and advice. . . . Ohio Commission authorized Home Telephone Co., Fairview, to issue and sell 5¼% First Mortgage Bonds, Series 1957, in the aggregate principal amount of $200,000, to be dated May 1, 1957, due and payable May 1, 1977. Cash is to be used to retire company's presently issued and outstanding short term notes in the principal amount of $195,000, remainder to be used to reimburse company's treasury.

HEAR every word on the TELEPHONE

with a BURGESS-MANNING "Hear-Here" Booth

Now you can hear every word clearly over the phone—even right next to a noisy machine. Burgess-Manning "HEAR-HERE" Booths are acoustically designed to provide an "isle of quiet" in the noisiest place. Ideal for manufacturing areas, hotels, stores, depots, shipping rooms, etc.—a model especially suited to each location.

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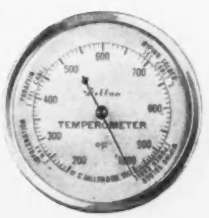

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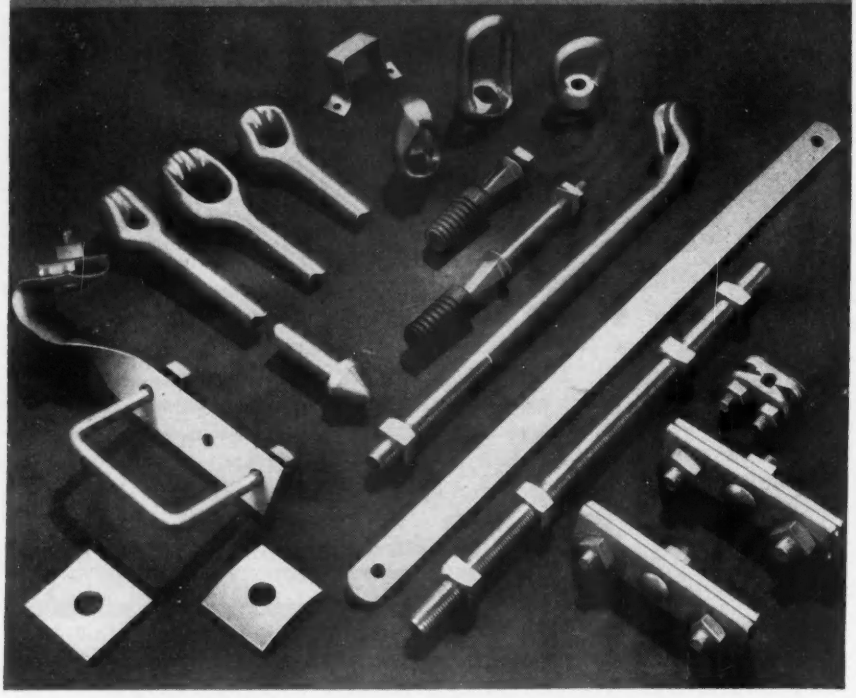

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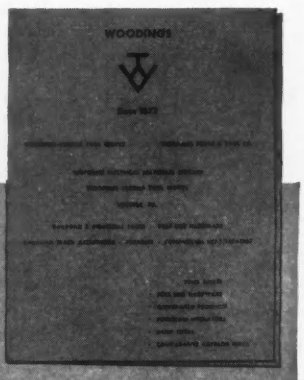

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NEW, EIGHT-PAGE 1957 catalog provides complete description and illustration of every clip in the Mueller Electric Co. line. Emphasis is on alligator-type and miniature test clips, including new low-cost "70 Series" alligators. Free sample "70 Series" clips will accompany catalog.

Erasing Machine

LITERATURE from Frederick Post Co. describes a new electric erasing machine, developed especially for the engineer and draftsman for faster erasing with minimum fatigue. Called the "Sovereign," this new machine operates cool under heavy work conditions, has minimum torque and automatic stall control.

Pipe Marking Materials

"HOW TO SELECT the Best Self-adhesive Pipe Marking Materials" is the theme of a new eight page catalog which describes over 500 self-adhesive Vinyl plastic pipe markers.

Self-adhesive cut-out numbers and letters and stock safety slogans widely used by Safety Engineers are completely illustrated. Many other self-adhesive products used by Plant Maintenance and Safety Engineers are discussed in the catalog.

Supply Catalog

CATALOG from Stromberg-Carlson Co. describes thousands of telephone supply items.

Truck Body

BULLETIN No. 941 (T-E-M) from York-Hoover Corp. describes the new YLW-96 body with hydraulic derrick and digger. Unit is designed for 2-man operation.

Wire & Cable

LITERATURE from Phelps Dodge Products Corp. describes complete line of paper and plastic insulated telephone wire and cable.

BUCKEYE Carries Quantities of SUPERIOR Telephone Cable in Stock for IMMEDIATE SHIPMENTS to Aid in Your Spring Construction Programs

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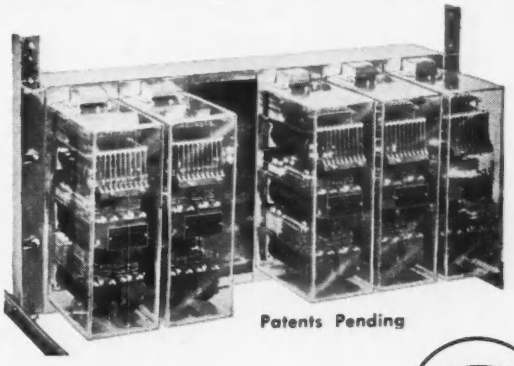

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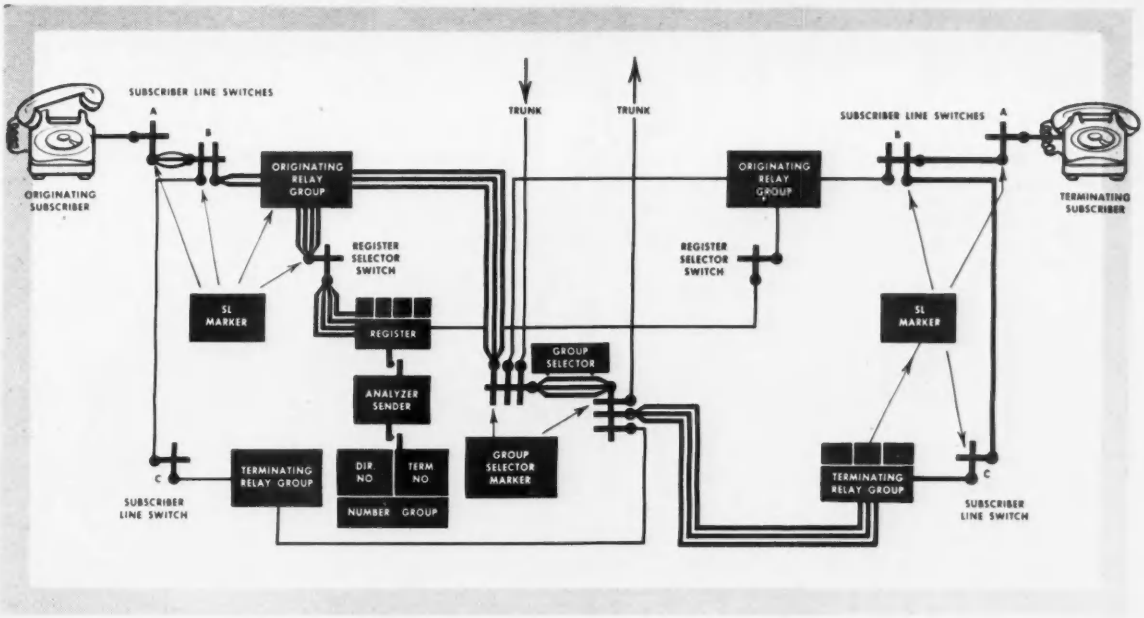

NORTH by-path crossbar switching opens the door to modern telephony

North is now producing, installing, and cutting over By-Path Crossbar exchanges all over the United States. North By-Path Crossbar is the answer to tomorrow's requirements TODAY.

North By-Path Crossbar Switching enables you to handle all the advanced telephonic services that are fast becoming standard for progressive exchanges—Direct Distance Dialing, Automatic Ticketing, Automatic Line Identification, Call Meter Service, Traffic Recording, and Automatic Routing.

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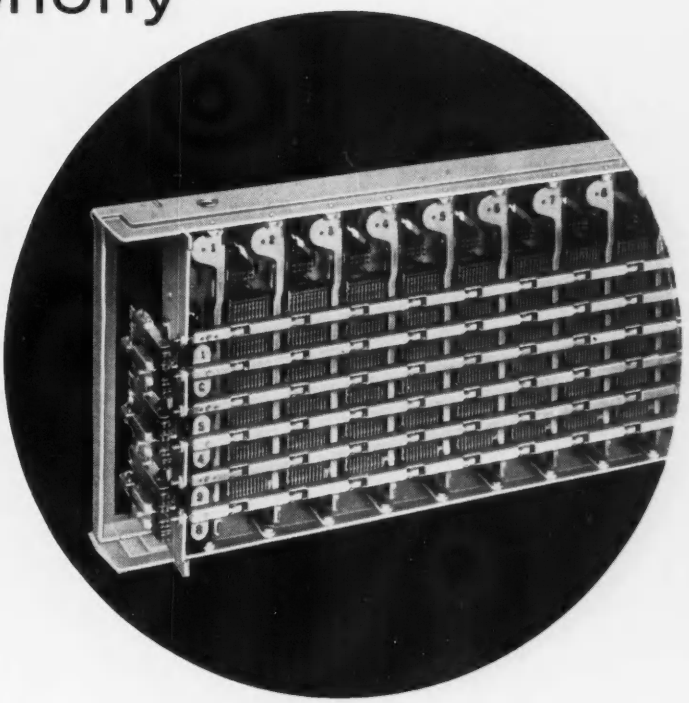
North By-Path Crossbar requires less floor space and is readily expandable.

Tested and approved, in use today, NORTH BY-PATH CROSSBAR is universally acknowledged as the most advanced practical telephony switching system.



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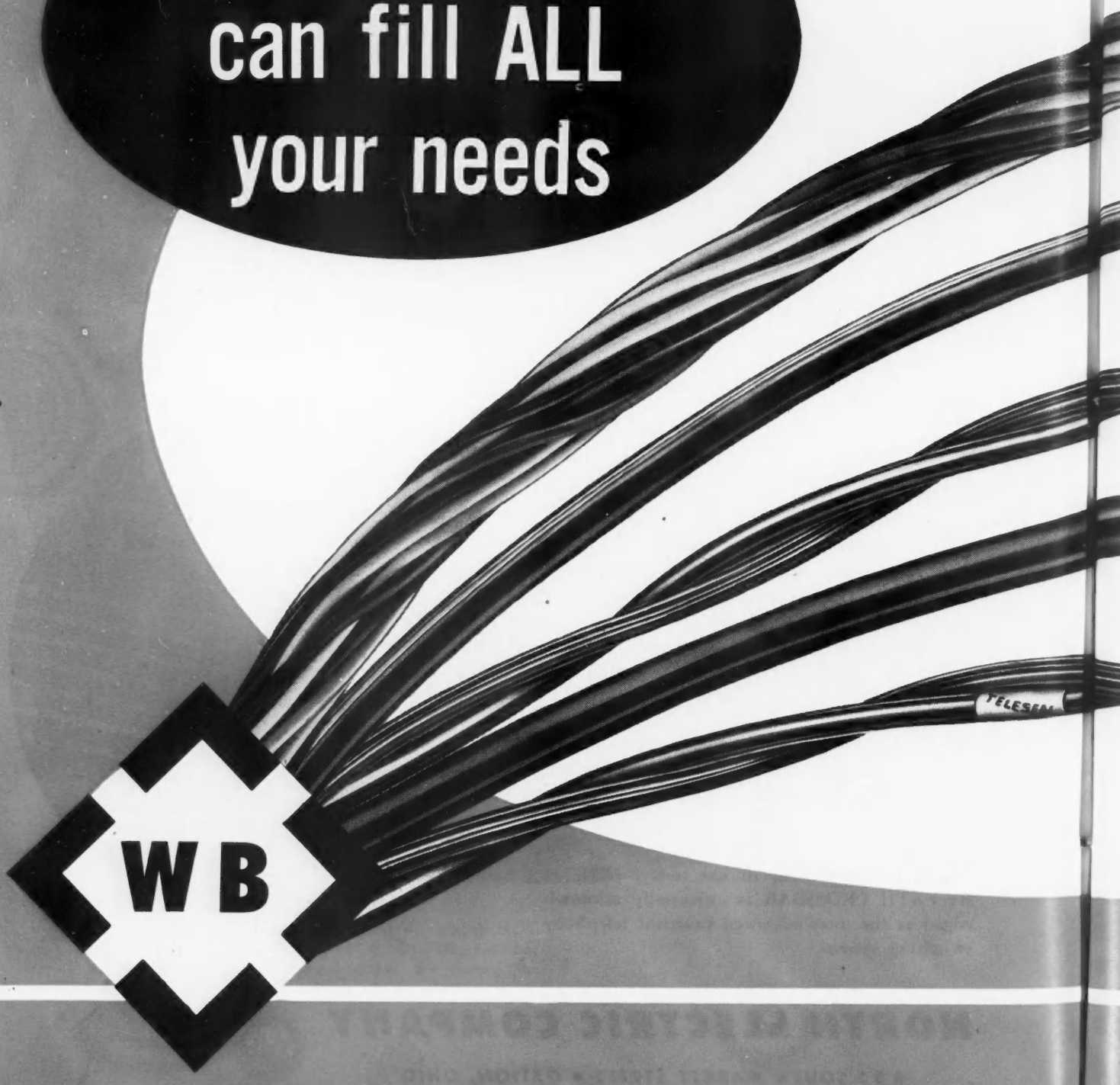

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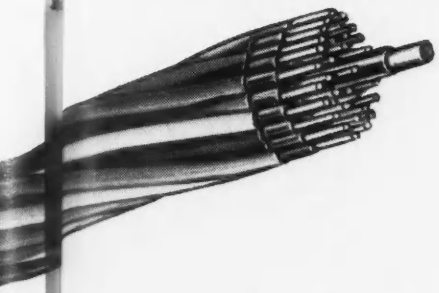
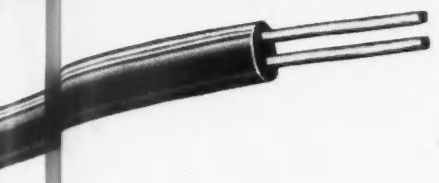
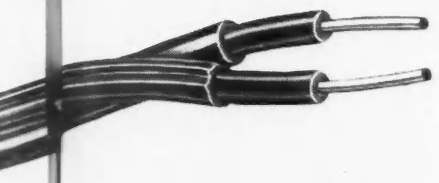


MULTI-PAIR DISTRIBUTION WIRE . . . Self supporting, available in 3, 6, 11 and 16 pair No. 19 AWG copper, polyethylene insulation and color-coded polyvinyl chloride covering.

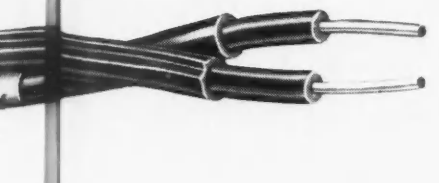


PARALLEL DISTRIBUTION WIRE . . . Self supporting, available in extra high strength 30% Copperweld No. 14 AWG and .080". Insulated with WB special, tough black polyethylene compound.



TELEPRENE® DISTRIBUTION WIRE . . . Self supporting, available in No. 14 and No. 16 AWG hard copper conductors rubber insulated and neoprene jacketed.

ARMORED TELESEAL DISTRIBUTION WIRE . . . For direct burial, in No. 16 AWG soft copper conductors with specially developed, low moisture absorbing rubber insulation. Served armor of flat steel wires, neoprene jacket.



TELESEAL® DISTRIBUTION WIRE . . . For direct burial, available in No. 16, No. 14, or No. 12 AWG hard copper conductors, specially developed, low moisture absorbing rubber insulation, neoprene jacketed.

WHITNEY BLAKE has a complete line of distribution wire to serve the Independent Telephone Industry no matter what the need may be.

From one source — WHITNEY BLAKE — telephone companies can fill all their requirements with assurance of one high standard of quality . . . quality that has again and again demonstrated that the best wire — the longest lasting wire — is far more economical than a lower priced, short lived wire that needs early replacement.

WHITNEY BLAKE telephone wires are made by experienced wire makers and have proved their value in years of long service across the nation.

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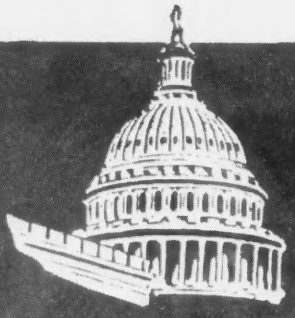
WASHINGTON NEWSLETTER



"Battle of the Budget"

THIS COULD GO down in the history books as the year of the "battle of the budget" with not only the Republican administration and the Democratic-controlled Congress carrying on a running fight, but with both the House and Senate apparently locked in battle to see which one can outdo the other in slashing the funds requested for the various executive agencies.

Another strong indication of the economy-mindedness of Congress in 1957 came when the House Appropriations Committee reported the Agriculture funds bill for the fiscal year beginning July 1, cutting the Rural Electrification Administration's administrative funds to the fiscal 1957 level, plus an allowance for added pension fund contributions.

For REA administrative expenses, the committee approved $9,030,950, with the $430,950 boost over the present fiscal year entirely attributable to the pension requirements. The amount endorsed is $598,050 below the request in President Eisenhower's budget, which had called for a boost of $1,029,000.

The new telephone loan fund authorization was $60,000,000, the amount requested in the budget. This figure is somewhat academic, in view of authority carried over, and supplemental funds which are made available when REA loan activity — which is limited principally by administrative manpower and the level of loan applications received — goes beyond loan funds authorized.

Under the President's budget, the $9,629,000 administrative fund asked would have been about evenly divided between the telephone and electrification programs.

Perhaps the most dramatic demonstration of Congress' intent to cut the budget as far as agencies concerned with communications are concerned was the cutback in the appropriation for the Business & Defense Administration of the Department of Commerce. The 25 industry divisions of the agency include those for communications and electronics.

In paring the BDSA budget, the House directed that a saving of more than $3,000,000 could be effected by eliminating all of the industry divisions, which serve as a liaison between the government and industry as well as playing a part in the government's mobilization and preparedness program.

Historically, the Senate usually restores much of the money knocked out by the House, but this has not been a year for usual practices and in many cases the Senate has decided to reduce funds even more than the House. For BDSA, the Senate Appropriations Committee voted a fund of $2.1 billion for the industry divisions, and if this amount becomes the final result, it will mean a great lessening in the functions of the agency.

Washington Outlook

WITHOUT STRICT regard to the calendar, veteran observers label the Easter vacation period — when Congress closes shop for a week and most lawmakers return to their home states and districts — as the halfway mark in the legislative session. When Senators and Representatives return to Capitol Hill, some strong indications emerge as to what major legislation might be expected before the session formally adjourns about mid-summer.

With the accent this year more than ever on the budget and talk of a possible tax cut, many observers do not foresee much else in the way of important bills working their way through the legislative mill.

At this point, speculation leans toward the conclusion that among the proposed laws that will not come to fruition are those dealing with suggested changes in the Fair Labor Standards Act, even though quite a few bills have been put into the Congressional hopper that would extend minimum wage law coverage to as many as 12,000,000 people.

This opinion prevails even though a so-called "compromise" bill has been given to the Senate Labor Committee by a subcommittee which would extend coverage to some 6,000,000 more workers, including an estimated 40,000 telephone switchboard operators.

The bill, authored by Sen. John Kenndey (D., Mass.), would terminate the present 750-station exemption in the telephone industry and limit exclusions under FLSA to operators providing telephone service through a switchboard located in the operator's home.

The measure is more extensive than administration proposals, but it does not go as far as the legislation proposed by Sen. Wayne Morse (D., Ore.), who would have brought about 12,000,000 more workers under provisions of the law, instead of about 2,500,000 affected by the suggestions that were sent to the Congress by President Eisenhower.

Coupled with the fact that no definite move has been made on the House side is the likelihood that the conservative Senate Labor Committee will be slow in acting on its subcommittee's bill and, as a later development, the legislation would be expected to get sidetracked on the Senate floor, if it reaches that point.

While labor union leaders have asked for extended coverage under the minimum wage law, they do not appear to be pushing too hard for the legislation now as attention is directed more to the hearings of the Senate Rackets Investigating Committee into the affairs of Teamsters' Boss Dave Beck.

This Senate Rackets Committee, incidentally, is reportedly looking into the possibility of investigating the violence which marked the 7½-month strike of the Communication Workers of America against the Ohio Consolidated Telephone Co.

Capitol sources say that the committee has had staff investigators visit Portsmouth, O.

"Jones Challenges Beirne"

ON THE SUBJECT of labor unions, the announcement of A. T. Jones, Vice President of the Communications Workers of America, that he will seek the union's presidency at the Kansas City convention in mid-June is attracting a great deal of interest.

Mr. Jones' statement brought into the open a breach which has been known to exist between him and the union's President Joseph A. Beirne for the past several years resulting from basic philosophic differences as to the operation of the union.

In a brief statement from the union's Washington headquarters, Mr. Beirne said that Mr. Jones "has been running for President for the past four years and he has finally come out in the open."

In his statement announcing his candidacy, Mr. Jones charged that "Through the process of failing to do the right things and consistently doing the wrong things, Joseph Beirne's leadership has resulted in the abject failure to build the kind of union communications workers need and deserve in order to properly deal with the giants of American industry who sit across the bargaining table."

Dept. of Agriculture Reports On Farm Telephones

AS OF last July 1, about 55 percent of the nation's farmers with telephones had dial service, 18 percent had common battery telephones, and 27 percent had magneto service, according to the Agricultural Estimates Division of the Department of Agriculture's Marketing Service.

During the past three years, the group said, the proportion of dial telephones on the farms has risen sharply, while the ratio of magneto telephones has gone down similarly, and common battery service has remained fairly constant, showing a slight decrease in percentage. In 1954, for example, 20 percent had common battery, 45 percent had dial, and 35 percent had magneto. The survey also showed that 26 percent of the farmers with phone service had nine or more parties on their lines; 48 percent had 5-8 parties; 22 percent had 2-4 parties; and 4 percent had individual line service.

RESISTS OLD AGE

THANKS TO "YOUNG PROCESS"!

Kennecott's exclusive "Young Process" lead sheath does much to lengthen the life of Kennecott Telephone Cable. This sheath production method virtually eliminates oxides and impurities! Sheath is far more uniform in strength and burst resistance, with greatly reduced weld area. It provides increased protection against damage and aging. Cable retains full electrical properties over its long life! Contact the Chase sales office near you for full information.

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KLEIN

preferred by linemen
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When it comes to leather goods for linemen or electricians, the name Klein today stands for the highest in quality as it has since the first wires were strung.

In Klein-Kord, too, Klein offers to industry the first specially woven fabric for safety straps—a fabric designed to permit the use of a tongue-type buckle without the risk of slitting or ripping under severe strain.

Now in Nylon Klein-Kord safety straps Klein still leads with the newest in safety equipment specially designed for use by utilities wherever power or communication lines are strung.

Write for Free Tool Guide
A free copy of the new Klein Pocket Tool Guide will be sent to anyone interested on request.

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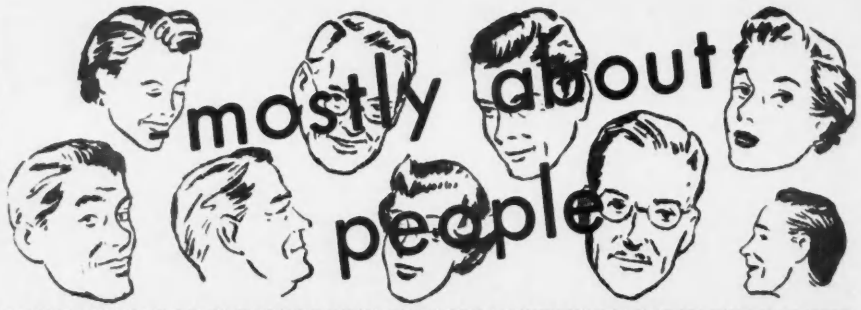


ACROSS THE EDITOR'S DESK

New Ad Representatives

WELCOME to our new advertising representatives who will now represent us on the West Coast and in the Southwest. Our West Coast representatives are *Keith H. Evans & Associates* with main headquarters at 3723 *Wilshire Blvd., Los Angeles* 5, *Calif.* Telephone *DUnkirk* 82981. Their San Francisco office is *Room* 816, 593 *Market St., San Francisco* 5. Telephone *YUkon* 2-4280. We are indeed pleased to introduce these fine people as our official representatives on the West Coast.

Ed Whetzle, 929 *Cordova Ave., Dallas* 23, *Texas* will represent us in the states of Texas, Oklahoma, Arkansas and Louisiana and are already calling on our friends in that area. Ed comes to us as an experienced advertising man and we feel his aid will be welcomed by our advertisers in those states.

Conventions

THE state telephone conventions are maintaining the impetus of heavy attendance throughout the country. We congratulate these associations and especially their program committees on the excellent programs they are presenting and to the speakers who in most cases contribute their time and thoughts to make these meetings of increasing value to the industry. The Spring convention season will end with the meeting of the New York State Telephone Association on June 16 and 17, at Schroon Lake, New York, but until that time state annual conventions are scheduled almost weekly.

Recent Deaths

SINCE last writing this column we and the industry have been saddened by the deaths of several prominent operating telephone men. *Michael A. Higgins*, for many years a vice president of the Gary operating companies, and since the merger with the General Telephone Co. died May 10 in Evanston, Ill. following an extended illness and a gallant battle to regain his health.

A. C. "Gus" Belden, for the past 10 years Editor of the "Life Lines,"

Plan to Attend USITA'S 60th Anniversary Convention, at Conrad Hilton Hotel, Chicago, October 14, 15, 16.

magazine of the California Water & Telephone, died from a sudden illness in March.

Joseph L. Kaczmarek, manager of the Benton Co-op Telephone Co., of Rice and Gilman, Minn. from a heart attack on April 29.

We and our industry will miss them.

Telephone Week

INDEPENDENT Telephone Week will start September 8 and will be important to all telephone companies. The USITA through Donald C. Power president, issued the proclamation which was carried in the May 1 issue of this magazine. We urge all operating companies to do all in their power to make this week one to be remembered. The 60th Anniversary of USITA will be publicized by the advertising in national magazines and many of the manufacturers and suppliers to our industry will cooperate.

We will co-operate with the industry and the USITA by issuing our pre-convention number of October 1 to celebrate the 60th Anniversary of USITA and its growth through the years. We will also work with the USITA to make Independent Telephone Week the success we know it will be.

POWERS *American* **PRESENTS . . .**

an aerial unit designed specifically for operations requiring only one workman

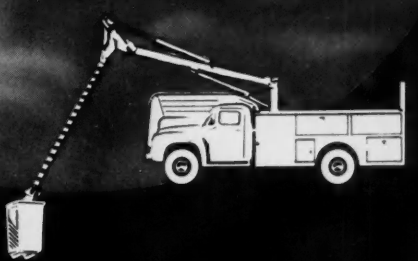
THE COMPLETELY NEW

Series AB-1-41

"Sky-Master®"

HYDRAULIC AERIAL BEAM

FOR WORKING IN HARD-TO-REACH PLACES WITH GROUND-LEVEL EASE



Over • under • around obstacles . . . Sky-Master quickly reaches out-of-the-way work – and provides on-the-ground safety and comfort for the workman.

Independently-operated steel beams are moved by double-acting hydraulic cylinders, through a unique system of linkage which greatly increases operating range. There are no chains, sprockets, or other secondary means of actuation. Supporting mast can be rotated *continuously* in either direction.

Work basket and insulated outer beam protects workman from 60,000 volts. Basket is automatically locked in position in event of damage to hydraulic lines.

The AB-1-41 . . . having ground-to-basket floor height of 41' . . . can be equipped for your particular job, and installed on a Powers-American Body that fits your needs.

The heavy-duty Series AB-37 and AB-43 Sky-Master carries two men up, out, over, or down. Available in 37' and 43' ground-to-basket heights.

Descriptive literature on Series AB-1 and Series AB Sky-Master – with price information – will be sent on request.

McCABE-POWERS AUTO BODY COMPANY

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Independent telephones help you reach all America

Just like home. Modern America gets around—and telephone service keeps right in step. Instant service—whenever, *wherever* you need it—is the aim of all 4,400 of the nation's Independent telephone companies. Joined to every other telephone in the nation, their nine million phones now serve 11,000 communities in 47 states—quickly, economically, and with greater convenience than ever before.

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INDEPENDENT TELEPHONE COMPANIES of America United States Independent Telephone Association • Pennsylvania Building • Washington, D.C.

EDITORIAL

"Six Percent On What?"

ALONG WITH US you'll probably remember that a few years ago a certain state commission denied the application of a telephone company for an increase of exchange rates. Nothing new, of course, in that.

But in this case the company appealed to the courts. The commission asserted that, even without an increase, the company was earning *nearly* 6 *percent.*

The the judge asked a very pertinent question. He asked: *"Six percent on what?"*

Now industry members know that 6 percent is not an adequate earning for a telephone company, on anything a commission is likely to recognize as a rate base. But the point here is that the percentage of rate of return means nothing at all unless *it is calculated on an amount of rate base that is fair to the company.*

This question, the amount of the rate base, is about the most controversial question in a telephone rate case. And some commissions have been watering the amount of rate base down and down, and undertaking to determine it by methods that are less and less tangible.

If this process continues the day may well come when no so-called "rate of return" can be high enough, from a practical standpoint, to produce an earning on the money already invested in the business and — what is just as important — to attract new capital into it.

This kind of situation is a discouragement to the growth of the telephone industry, at a time when the demand for more telephones is the greatest ever. At a time, also, when the investment required for telephone growth is the highest ever.

A telephone company might, for illustration, find itself in a situation such as this (These figures are wholly illustrative and are not intended to be factual): That while its books show it has an investment averaging $200 per telephone in service, the commission calculates its rate base at around $150 average per telephone. Yet, at present-day costs of labor, equipment and materials, it must invest over $300 per station to install more telephones.

The difficulty of getting a lot of new money into the business under conditions such as that is apparent.

The answer is, we think, that telephone companies must not only be allowed a more liberal rate of return, but also that *such return must be calculated on a rate base which takes into account present-day costs.*

The question is not merely that of what percent of earnings. It is that of *what percent on what?*

Certainly a rate of return based on original cost, less depreciation, even if the latter is brought into realistic proportions is still not adequate for the reason that such a view ignores the very basis on which the whole matter rests and that is *inflation.*

To conclude that a return based on depreciated original cost is fair, would in effect state that simply because a plumber or any other tradesman had gone into business 25 years ago, he is not entitled to earn the same kind of dollars as a man who went into the same business five years ago.

Today, as always, everyone is looking at earnings in the light of current purchasing power of dollars.

This is reflected in wages, farm prices and, in fact under some wage contracts, is a basis for adjusting pay for work.

In our opinion it cannot be logically reasoned that the dollars generated or earned in the telephone business differ in any way from the dollars earned in any other business or endeavor.

On the other hand, it does seem reasonable that a business should not only generate enough revenue to pay expenses of operation and a return to *pay for the use of money,* but also should return something above the bare cost of the business in the form of a reasonable surplus.

To accomplish that job requires, we believe, not only increasing the rate of return but giving reproduction cost adequate recognition in the rate-fixing process.

We believe telephone companies should press for a showdown on this fundamental problem by calling for a re-examination of the rate-fixing process with a view to bringing yesterday's academic theories into line with present-day realities. Such a showdown might prove that the percentage of rate of return means nothing at all unless it is calculated on a base that is fair to the company.

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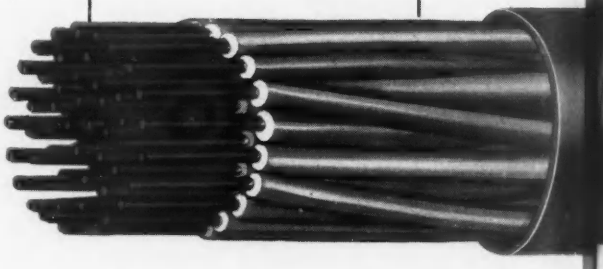

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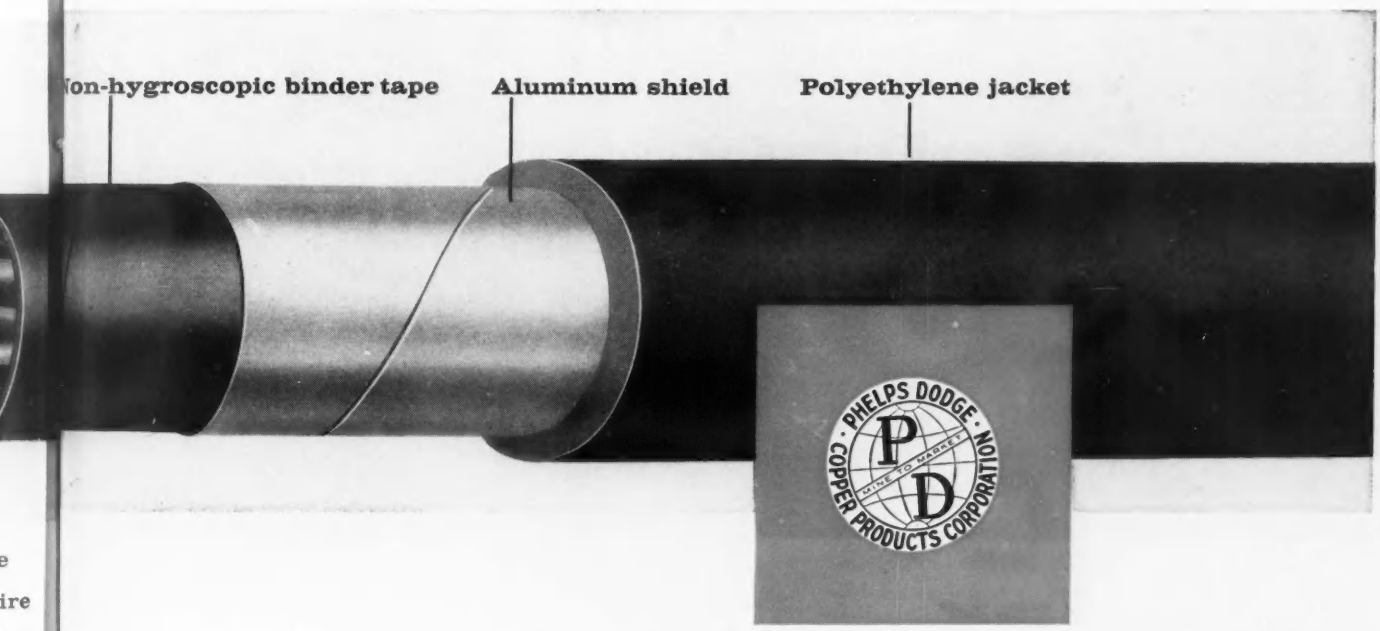

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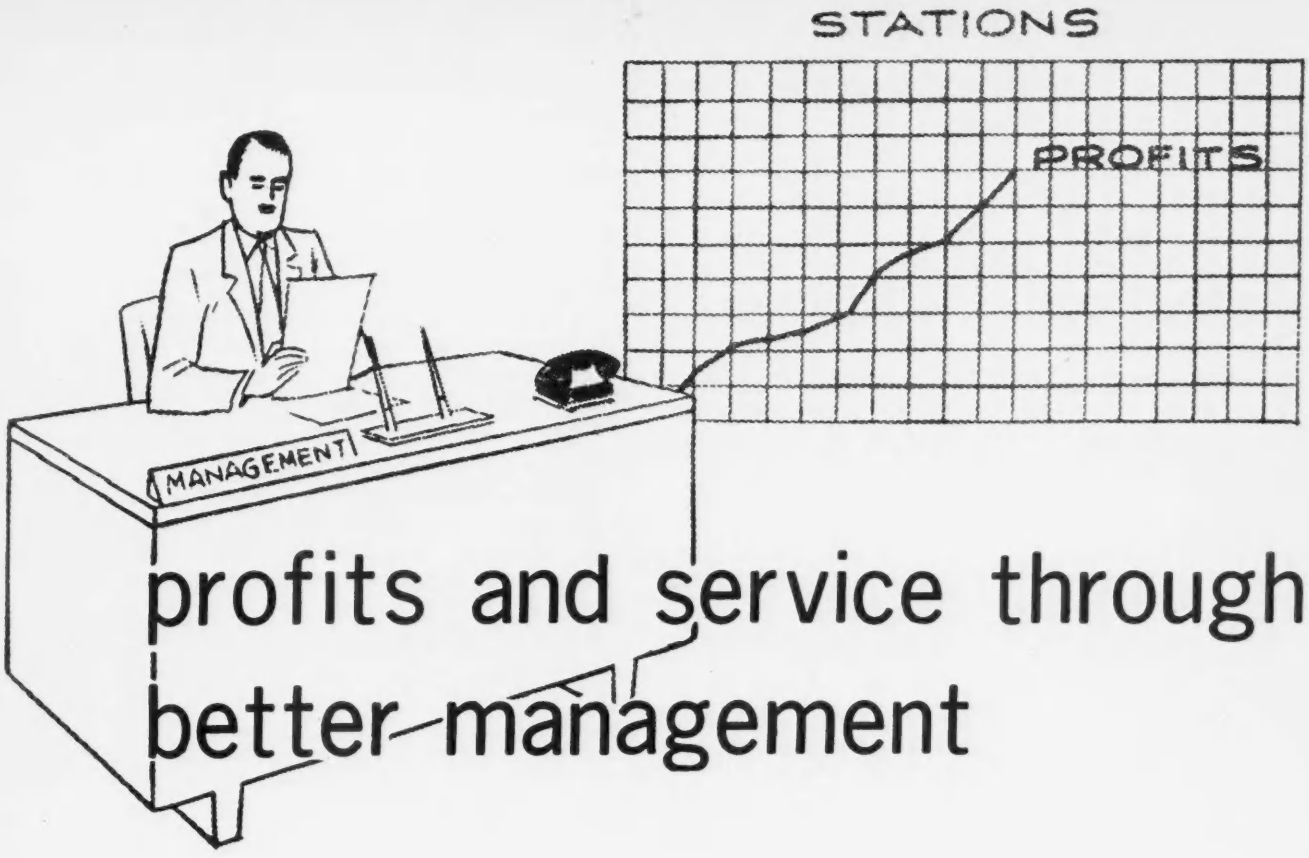


profits and service through better management

By JAMES L. MORRISON

CHAPTER SIX of Mr. Morrison's Article discusses — (1) Coordination and standardization; (2) effective organization, (3) the value of sound planning; (4) handling communications problems; and (5) establishing common objectives. Chapter Five appeared in the April 1 issue.

Coordination And Standardization

SUCCESSFUL organizations usually grow in size. The ambition and enthusiasm which contributes to success usually prompts managers and stockholders to expand their horizons in the direction of more customers, more sales and the eventual hope of greater profit. The telephone business is no exception to this familiar growth pattern of American industry.

Expanding organizations will discover, sooner or later, that growth alone seldom solves problems. On the contrary, growth usually magnifies existing problems and creates its own new areas for attention. The matter of coordination is one of those responsibilities of management which demands an increasing amount of attention and a higher degree of adeptness as the organization continues to grow.

Coordination involves the synchronizing and combining of actions and efforts of a group of people in pursuit of a common objective. Coordination is evident in those companies where employe activity is harmonious and well organized. Its absence is evident in those organizations where employes always seem to be working at cross purposes.

Small companies, by virtue of their size, seldom have serious coordination problems. They can be expected to occur, however, in any organization that employs several persons. The following material is designed to be helpful in understanding and dealing with coordination problems as they arise, and most important of all, in preventing such problems.

The need for effective coordination is readily apparent in any telephone company. A successful dial conversion, for example, depends upon the replacement of subscriber instruments, the addition and testing of new equipment and facilities, issuance of a new directory, subscriber education, and numerous other activities which overlap and should proceed in an orderly fashion. If they are not properly coordinated the conversion may prove unnecessarily costly, consume an unreasonable amount of time, and be regarded as a disagreeable chore rather than a welcome opportunity.

Effective Organization

THE sound and well planned organizational structure is the prime ingredient for effective coordination. Each office, area, or department should have clearly defined and well understood duties and responsibilities. Overlapping of functions should be avoided and can seldom be justified from an economic viewpoint. Related activities should be combined in the same office or department. Better coordination can be achieved, for example, if purchasing is assigned to one department rather than several. Overlapping usually encourages

confusion and resentment which are the enemies of coordination.

It is also important that each individual have a clear and certain understanding of his duties and responsibilities. Uncertainty about who is responsible for a particular function often produces a situation where everyone or no one takes action. In either event the result is not satisfactory.

For projects which require the efforts of numerous people in more than one department it is suggested that coordination may be improved if a special coordinator is appointed to oversee the project. It should be his responsibility to see that each individual knows what he is to do and how his work relates to work being done by others. Frequent resort, however, to "special" coordinating devices is usually good evidence of unsatisfactory organizational planning.

Proper Planning

SOUND planning is one of the greatest aids to effective coordination. The planning process involves a study and consideration of all pertinent factors to be certain that each phase of the plan fits into the overall program. The coordinating job will be easier if planning is designed not only to cover the details but also to arrange those details in a desirable sequence.

Coordination of plans for a large project can often be achieved with harmony if all individuals recognize and understand the primary objective. Coordination usually breaks down when departments or individuals plan activities which are not consistent with the plans of others. This lack of consistency can produce serious problems if not discovered at an early date. Its discovery is essentially a matter of communications which we shall consider presently.

Effective coordination not only requires proper planning it also necessitates careful timing. Most plans are laid out as a sequence of events organized to unfold in a certain manner. Each event is timed in relation to other events and with reference to the ultimate objective.

"SOUND planning is one of the greatest aids to effective coordination. It involves a study of all factors to make sure each phase of the plan fits into the overall program."

Timing requires a determination of each step necessary to reach the objective. If one step is dependent upon another their sequence must be established. The amount of time required to perform each step should be estimated until an overall time table has been developed. This type of planning will facilitate coordination.

Communications

ORGANIZATIONS with coordination problems nearly always have communications problems as well. A free and effective flow of information throughout the company will go a long way toward providing each individual with the information he needs about related work.

Many company projects, however, involve numerous details which cannot safely be planned far in advance. Frequently, many other people will be affected by these details. Many companies have found that both communications and coodination are improved if progress reports are periodically routed to all concerned. A master project schedule is prepared by each department. This information is then set forth in one comprehensive schedule which is periodically routed to each department or individual in order that they may know the status of related work as it progresses throughout the company. This basic idea may be adapted in numerous ways to fit various situations. It is a proven aid to coordination.

A reporting system along these lines may also prove to be a successful tool in controlling operations and costs. Its virtue lies in the fact that it specifies who is to provide the information, the information to be set forth, and what parties receive it. This is important because it relieves the individual of the difficult responsibility of deciding what information he should pass on to others.

Coordination meetings may also be desirable. They provide the opportunity for personal contact, for explanation and interpretation which is important to coordination.

Management should remain alert, however, to avoid elaborate reporting systems. Reports must be read and meetings attended. Voluminous reports and unnecessary or lengthy meetings are time consuming and expensive and may defeat the original coordinating purpose.

Establish Objectives

SEVERAL paragraphs back we suggested that coordination is easier to obtain when employes are collectively working toward a common objective such as a dial conversion. In such cases management will obtain a substantial amount of voluntary coordination because employes are willing to set aside differences and rivalries in favor of the common objective. Obviously such an atmosphere is beneficial to all company operations.

Employes should be guided toward establishing a mutual give and take relationship in order to accomplish overall company objectives. Without such a sincere spirit of cooperation company officials will spend much of their time in resolving differences and conflicts.

A dominant and overriding objective may be either special or continuing. The objective may be expansion, new improvements, a sales campaign, an economy drive,

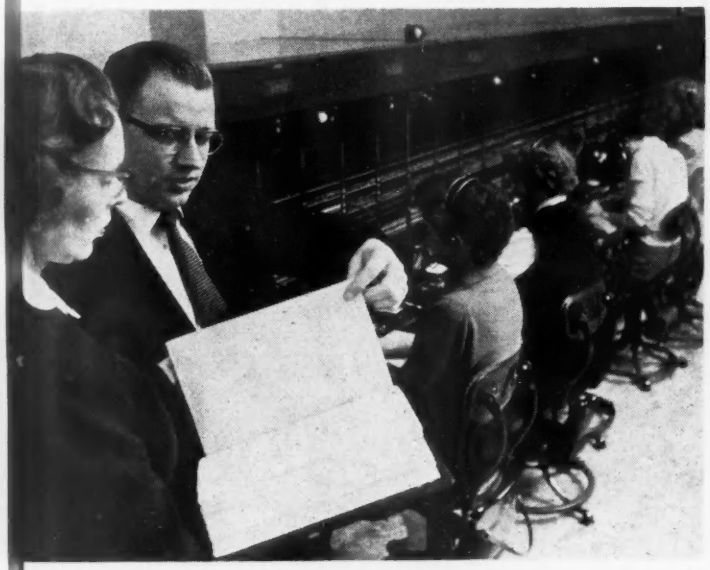
or a training and safety program. These and other goals can be used to enthuse employes.

Encourage Contacts

PEOPLE will work together more effectively if they understand each other and are otherwise generally compatible. Management, therefore, should watch its employe selection procedure to be certain that the right type of employe is selected and that he is properly placed.

Informal contacts will encourage mutual understanding and greatly supplement formal communications channels. Such informal get-togethers as the "coffee break" encourage personal contacts and the solving of minor differences. There are few, if any, more effective devices for solving problems than face to face discussions under relaxed and informal circumstances.

Coordination is essentially a matter of understanding. It will have been achieved if employes and departments freely and frequently communicate with each other, if



"COORDINATION is essentially a matter of understanding. It will be achieved when employes freely and frequently communicate with each other."

all concerned work together in a spirit of accomplishment, and if work flows evenly and smoothly between the various parties. Employes should have a strong desire to produce concrete results, understand the need for teamwork, and know how to accomplish it.

Employes should see their responsibilities as a part of the whole job, they should be willing to give and receive help, admit their errors and meet others halfway. For maximum effectiveness they must feel that everyone, including themselves, is doing a good job. They must also sincerely believe that others want to be fair and realize that everyone wants to feel important and be recognized.

In addition to the previous suggestions management can work toward these goals by planned rotation of certain personnel and by temporarily assigning one or more employes to work with another employe or department on matters of mutual interest.

Although a high degree of voluntary coordination is desirable, and will, if obtained, produce substantial and valuable benefits, the manager will never be able to entirely free himself from the responsibility of keeping the organization moving by adjusting differences, revising schedules, providing help and otherwise maintaining a balance within the organization. His ability to mesh the various functions into a smoothly operating concern will, in large measure, determine the success of the company.

Standardization

STANDARDIZATION is another valuable tool which scientific management has developed for use in even the smallest company. Through standardization, management establishes desired specifications for procedures, methods, quality of service, and time and work performance.

Standardization is essentially important because it makes possible the control of most phases of operation at a definite level of performance. Work standards, for example, provide a convenient guide for measuring employe performance. The standardization of materials, tools and equipment will facilitate training and enable the company to maintain the lowest possible inventories. It can also afford maximum opportunity to gain quantity purchase and other price concessions from manufacturers and suppliers. Standardized policies and procedures will permit the application of sound decisions consistently to meet reoccuring situations.

Management will be most familiar with the standards or specifications that have been developed for the construction of outside plant. These specifications have been developed with an eye toward both uniformity and economy. The time and material requirements for building a good line have been substantially standardized throughout the telephone industry. A construction foreman who can build a good line in Maine will have little difficulty in building a satisfactory line for another company in California.

For many companies standardization stops with the construction of outside plant. The principles can, however, be applied to most other phases of company operation with the same satisfactory results in terms of uniformity and economy. Performance and service standards can, for example, be applied to switchboard operation. The standards will be useful in training new operators, measuring on the job performance, and assist in maintaining a high degree of service for the customer. Standards are also desirable for employe selection, elapsed time for handling customer complaints, and a host of other areas in the operation of any company.

Work Standards

IDEALLY, work standards should accurately reflect managements expectations in quantity, quality and time. They should be designed to eliminate unnecessary effort and insure a consistently high quality of service. To be realistic, however, work standards must be developed on the basis of past experience.

In this manner they will assist management in meeting future requirements. The standards are developed after a thorough study of the operation under consideration. Each step in the operation is challenged to eliminate unnecessary steps and to determine the best

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way to perform the operation. This determination, should, as a rule be reached in cooperation with the employes.

If this is done employes will be much more likely to accept the standards. Without their acceptance and understanding the standards may prove to be the least efficient method for performing their work.

Time and Service Standards

TIME standards refer to the length of time normally required to perform a certain job, or the number of steps that should be completed within a certain time. In establishing time standards it will be necessary to first determine the best method for performing each operation. Then, determine the time required for a properly trained worker of satisfactory ability to perform the task. The timing should be done, of course, when the worker is performing at a normal rate of speed under normal conditions.

Standards are also desirable for controlling the quality of service rendered. In fact, if management does not select and maintain desirable service standards it can be expected that regulatory bodies or others will step into the picture. Standards for quality of service are not always easy to establish and will involve a greater degree of judgment in their application than other types of standards. Self regulation, however, would seem to be better than imposed regulation.

Standardization, like all other functions of management, can be excessive. If specifications cover too many aspects of operation with extreme standards, the result can be excessive rigidity and cost. The company must be kept flexible to avoid obsolescense and to prevent dislocation when external factors make changes necessary.

Furthermore, excessively standardized operations and procedures can make work disagreeable for employes, result in red tape, and lessen individual initiative. Finally, unless overall company standards are highly coordinated, conflicting standards established by various departments will defeat the original purpose.—*To Be Continued.*

Book Review

"Introduction to Semiconductors," by W. Crawford Dunlap, Jr. Published by John Wiley & Sons, Inc. 417 pages. $11.75.

In his book, Dr. Dunlap provides a unified elementary survey of the field, covering basic concepts, properties of materials, methods of measurement, and applications.

Following the introduction, the chapters deal consecutively with facts about crystals and their structure; theory of the solid state; imperfections in crystals; statistical mechanics for metals and semiconductors; the electron theory of metals and semiconductors; contact and surface properties of semiconductors; properties of p-n junctions; and experimental measurements on semiconductors. Further chapters cover general methods of preparing semiconductor materials; properties of the elemental semiconductors; semiconducting compounds; rectifiers; transistors; and photocells, thermistors, and other semiconductor applications.

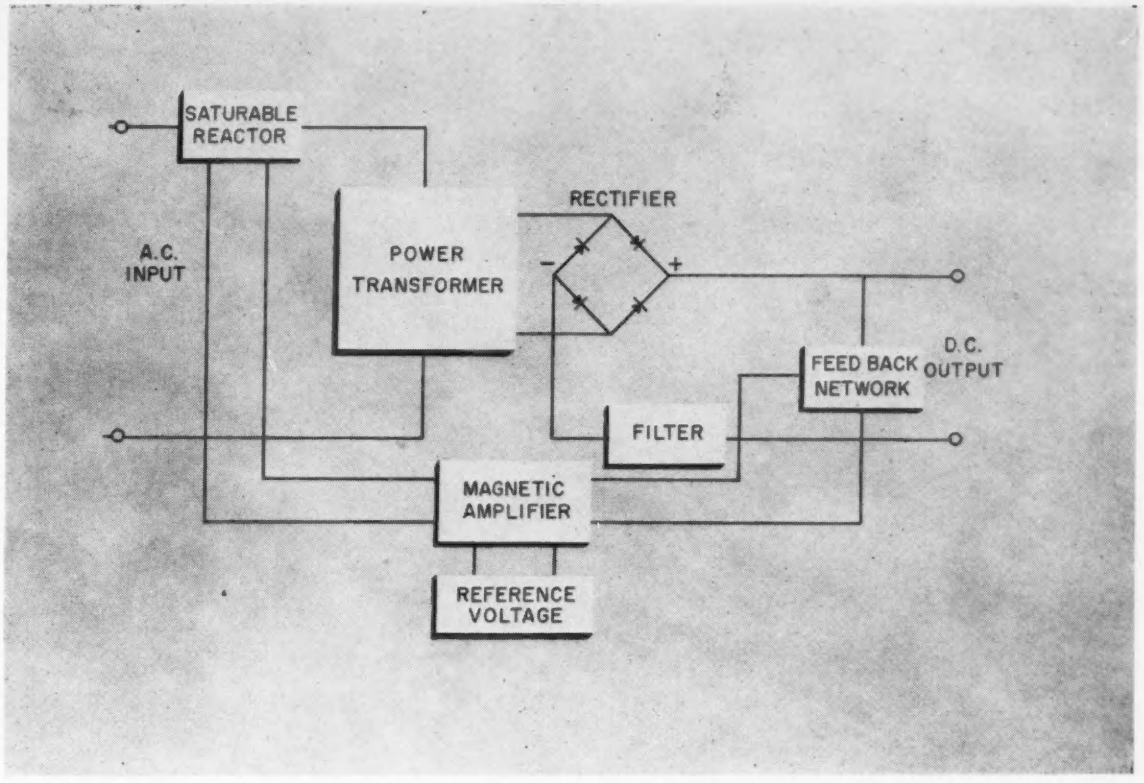

FIG. ONE:—Block diagram of magnetic amplifier controlled battery charger.

A Magnetic Amplifier Controlled Charger For Use In 'Floating' Battery Installations

By EUGENE H. CLARK*

THE TWO major causes of battery failure are over-charging and under-charging of the battery. In this article, Mr. Clark points out that the life of a battery maintained on float voltage at its proper cell ratings may exceed 18 years and describes the magnetic amplifier controlled charger.

STORAGE battery banks provide a simple and reliable method of furnishing continuous power for certain power and telephone applications. Batteries are used in power-stations and sub-stations to insure an adequate and uninterrupted power supply for remote control, indicating, and protective circuits, and in the telephone industry as a power source for transmission and switching. Recently, the first pipe-line microwave system to employ batteries as a source of power was placed in operation.

The selection of emergency power equipment, if any, is based upon a consideration of economic and operational factors. The choice of a power supply system depends on the desired degree of reliability, permissible outage time and its cost, the maintenance program, and the operational and functional costs of the system. In the communication and process control industry, assured continuous operation in the event of a power failure is essential. The usual requirement is that the system continues to operate for several hours or that essential "shut-down" or "start-up" equipment will have available power for proper functioning. Storage battery power systems have proven to be one of the effective and economical means of meeting this type of stringent service.

To maintain the storage battery in peak condition ready to meet emergency operations, as well as to give it extended life, modern battery maintenance calls for "floating" operation. Floating storage batteries utilize a

*Raytheon Manufacturing Co. (Commercial Equip. Div.)

constant-potential battery charger connected in parallel with the DC equipment load and the storage battery. The battery charger normally furnishes the load current requirements plus a slight amount of current to the battery called a trickle charge which overcomes local action at the plates. As the battery is not providing any load current, it is considered to be "floating" across the charger. In the event of a power failure, the storage battery will instantaneously deliver current to the load, thus assuring uninterrupted operation of the equipment. When the primary power is restored, the battery charger will resume supplying power to the load and will simultaneously recharge the battery.

This paper describes a magnetic-amplifier controlled battery charger for use in "floating" battery installations. Battery characteristics influencing the design of this type of charger are discussed to provide the background upon which such a design is based.

Factors Affecting Battery Operation and Life:

THE PRIME use of the storage battery bank is to furnish current to the load for a specified period of time, hence, the most common measure of a battery is its so-called ampere-hour capacity. The capacity of a battery is the number of ampere-hours that can be delivered within a certain period of time. For stationary batteries, this period is normally eight hours. During this period of discharge, the terminal voltage falls gradually from its open-circuit value until the end of the discharge, when it drops much more rapidly. With a lead-antimony type cell, it is general practice for the float voltage to be 2.15 volts per cell. The output voltage declines gradually during discharge to approximately 1.75 volts per cell at which time the battery has given up the greater part of its capacity. During the charging part of the cycle, this process is reversed as the battery capacity is restored. The specific gravity of the electrolyte in a typical lead-antimony battery (for telephone service application) will also drop during the discharge cycle, going from 1.215 to 1.140 at discharge, this process being reversed during the charging cycle.

Theoretically, a battery should last indefinitely as the chemical reactions

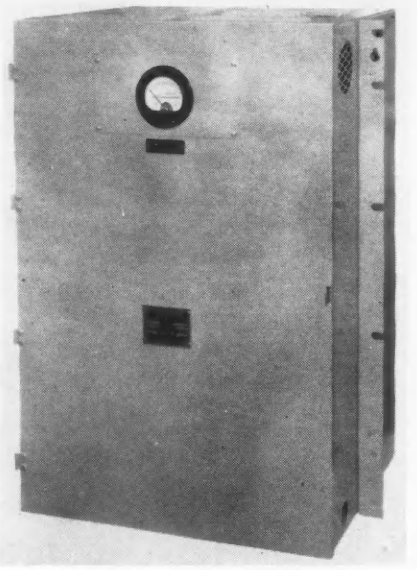

FIG. TWO:—Raytheon 48-volt magnetic amplifier controlled recticharger. (Model RC50C12 — 12 amperes).

which convert chemical energy into electrical energy during discharge are reversible and on charging the battery is restored to its original condition. No part of the plates or electrolyte is consumed. If this is the case, what then causes a battery's capacity to decrease and the battery finally to become unserviceable?

Two major causes of battery failure are overcharging and undercharging of the battery.

Overcharging of the battery tends to accelerate the corrosion of the positive plate. Also, overcharging tends to produce gassing of the electrolyte which loosens the plate material. This material settles to the bottom of the battery and is a measure of the aging of the battery. Maintenance of the battery at 2.15 volts per cell reduces gassing to a minimum level, this level being the result of local action, usually at the negative plate.

Undercharging of the battery, such as that caused by too low a float voltage, tends to result in "sulfation," which is the formation of lead sulfate, usually on the negative plates or as a sediment on the bottom of the battery. To reduce the effects of this "sulfation" it is a commonly recommended practice to periodically give the battery an equalizing charge at 2.33 volts per cell, although this cell voltage may be lower if associated equipment warrants it. The equalizing charge tends to correct variations in cell voltage and reduce the effects of sulfation.

The "life" of a battery maintained on float voltage at its proper cell rating may exceed 18 years. By comparison, the life expectancy of an automobile battery, which is subjected to violent cycling, is two or three years. The reduction of equipment replacements costs in systems utilizing "floating" batteries can be of major economic significance.

Requirements For A Battery Charger:

THE BATTERY characteristics described indicates the general requirements that a battery charger must meet.

If the charger is to maintain the battery at its proper floating voltage, the charger should be well regulated from light-load to full-load despite source power variations. The output voltage should have some flexibility in its range to permit the setting of more than one floating level. Provision must be made for an equalizing charge. The charger capacity should be adequate to meet the load requirements, as well as to charge the battery after a power failure in a reasonable length of time.

As the battery may be located in an unattended office, the charger should incorporate conservative design practices to insure continuity of operation and long life. These considerations must be weighed against cost considerations.

Rising labor costs and the scarcity of qualified personnel requires that the equipment selected should require a minimum of maintenance and service. The operation of the charger should, of course, be as nearly automatic as possible. Furthermore, the charger should be designed to be fully self-protecting.

A variety of charging equipment having these characteristics is available for maintaining storage batteries at proper voltage and capacity levels. The two most prevalent forms utilized are motor-generator sets, or electronic equipment utilizing as DC sources, gas diodes or metallic rectifiers. The control circuitry in both types may utilize various design approaches.

The requirements of a modern battery charger for floating operation then are as follows:

(1) The output voltage of the charger should be held within close limits in the presence of line changes and load variations within its rating.

(2) For economic reasons, it

should be self-protecting so far as the charger components and the battery are concerned.

(3) It should be capable of being easily adjusted to meet the float and equalizing voltage requirements of the battery.

(4) It should be as small and light as possible.

(5) It should be built for long life, easy maintenance and interchangeability of parts.

(6) It should be designed for as high efficiency as is economically feasible at light load.

Functions Of A Magnetic Amplifier Controlled Charger

IN *FIGURE* 1 is shown the block diagram of a typical magnetic amplifier controlled battery charger (*Figure* 2) for the float operation of a stationary battery. This diagram indicates six basic sections essential to the operation of the charger. The functions of each of these sections are explained as follows:

Power Transformer: — The power transformer converts a standard AC voltage into the desired charger output voltage. To take care of variations in the voltage of the power supply to the charger, the transformer primary winding is provided with taps to adjust the output voltage to the proper value for the charger supply.

Saturable Reactor: — Saturable reactors vary in construction and use different arrangements of coils and magnetic core materials. The reactor under discussion has two separate windings, a main or AC winding and a control winding. The main winding itself has two windings which are connected in parallel in such a way that the magnetic flux cancels in the center leg on which the control winding is placed.

The power delivered to the load is limited by the reactor impedance. The higher the impedance, the higher the opposition to the flow of current through the reactor and smaller the power available for the load. Conversely, the lower the impedance, the lower the opposition and the higher the power delivered to the load.

The impedance of the reactor is varied by introducing direct current into the DC winding, causing saturation of the iron core material and reducing the impedance. The degree of saturation is determined by the amount of DC current applied.

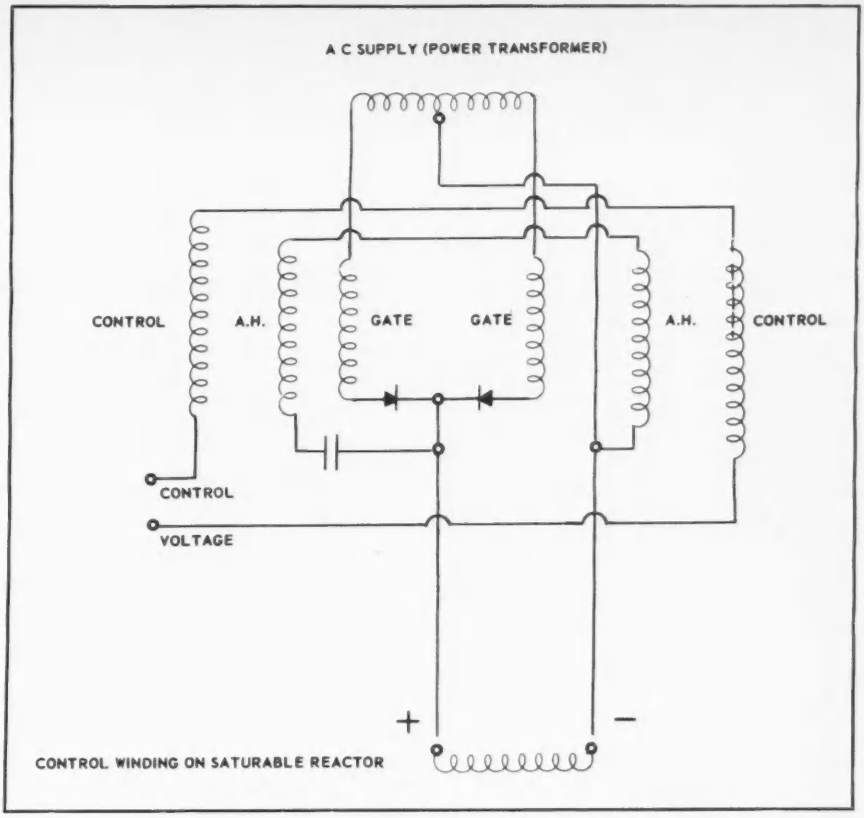

FIG. THREE:—Schematic diagram of magnetic amplifier.

The proper operation of the saturable reactor depends on the fact that the ampere turns in the AC winding must equal the ampere turns of the control winding. By providing a large number of turns in the control winding on the center leg, it is possible to control the saturation and, therefore, the output current of the reactor by small amounts of direct current. This represents a power gain in that small quantity of DC power can be used to vary large amounts of AC power.

The saturable reactor also provides a means of protecting against overloading by limiting the current drawn by the load to a safe value. The reactor will deliver to the power transformer primary a constant voltage up to the full load requirements of the charger. At full load the saturable reactor becomes completely saturated and will not deliver any more current at the constant potential. It can deliver more current, but when it starts to do so, the losses in the AC winding are greatly increased and the voltage drop across the reactor becomes considerable.

The greater the drop across the reactor the lower the voltage available at the power transformer. Increasing the load current to about 125% of the charger's rating causes the voltage to drop off considerably and limit the current. The current available under this condition will not harm the rectifiers since they are rated higher than the current value at this point.

Magnetic Amplifier: — A self-saturating full wave magnetic amplifier is used to supply the control current for the simple saturable reactor.

In *Figure* 3 is a simplified schematic diagram of a typical magnetic amplifier. This diagram shows a center tap amplifier circuit. The magnetic amplifier itself consists of two toroidal cores, on each of which is wound an identical winding. These are normally the load or gate windings. The two cores are then stacked and another winding called the control winding is wound over the load windings.

As will be seen from the diagram, the load windings are connected in series with metallic rectifiers so that only unidirecional half-wave pulses of current will flow in each winding. It will be observed, however, that as connected, the half-wave pulses flow on opposite half cycles of the supply voltage, which combine in the load circuit (the control winding of the saturable reactor) to produce a full wave rectified current.

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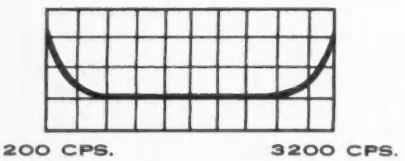
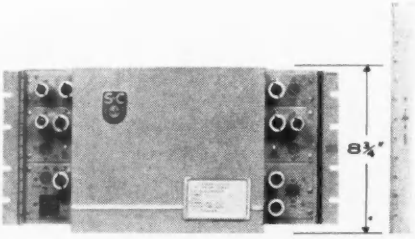
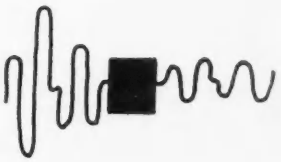


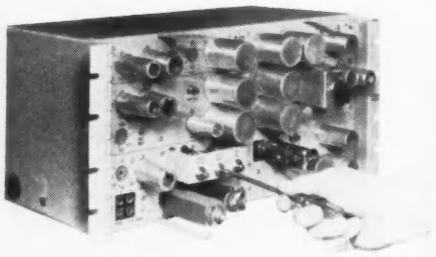
1. Toll quality frequency response: —3 db. points at 350 and 2900 cps.; —10 db. points at 200 and 3200 cps.



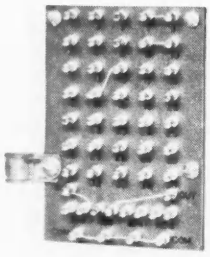
2. A unit of "501" carrier takes only 8¾ inches of rack space.



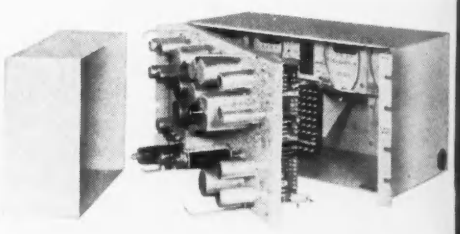
3. Voice limiters safely reduce excess voice currents that might cause unwanted relay operation.



4. Only 9 controls in the system mean simplified operation and less possibility of breakdown.



5. You can convert from ringdown to dial operation by simple wire strapping on the terminal board. There are no parts to change.



6. Units are complete and factory-wired.

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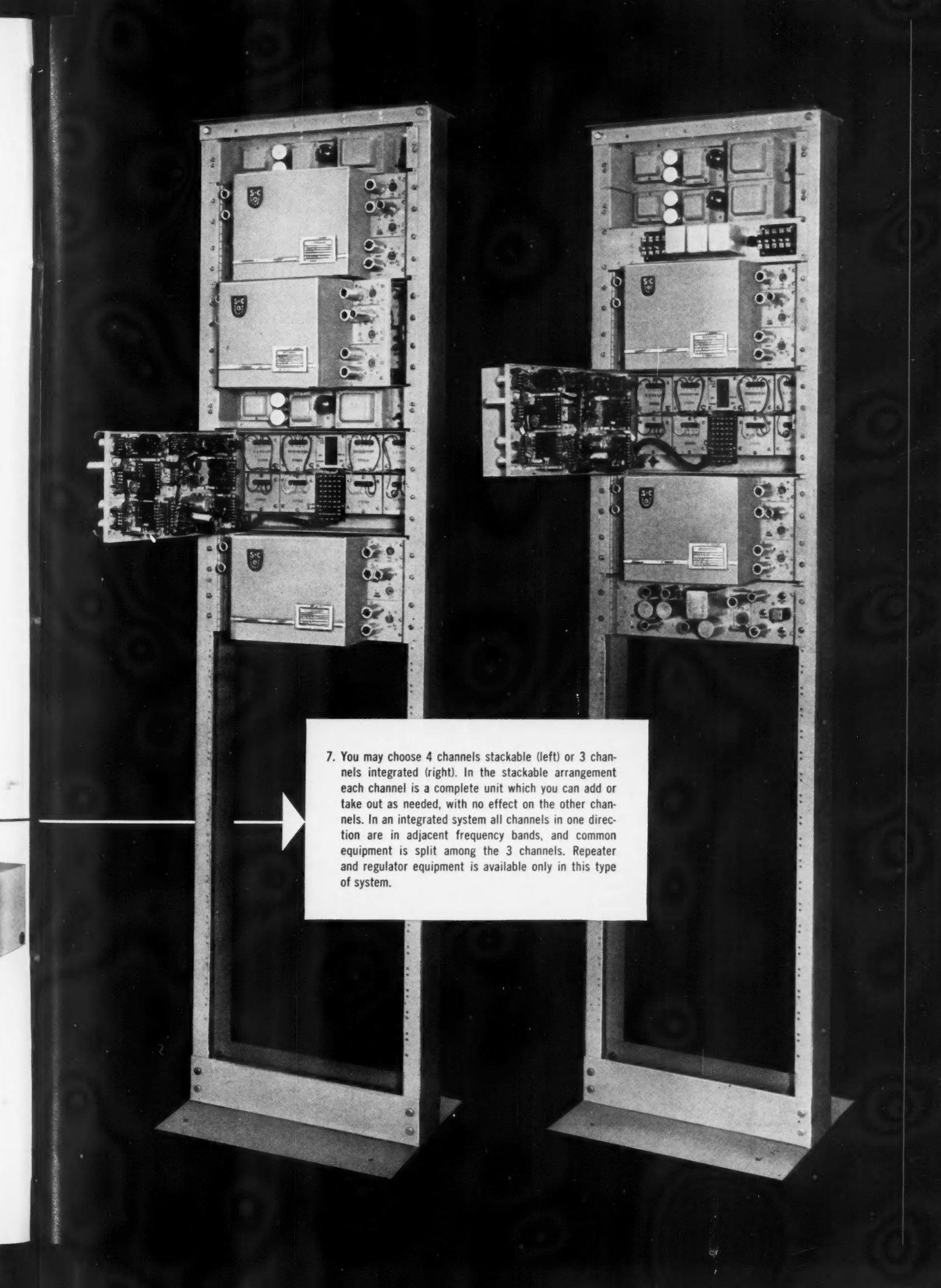

7. You may choose 4 channels stackable (left) or 3 channels integrated (right). In the stackable arrangement each channel is a complete unit which you can add or take out as needed, with no effect on the other channels. In an integrated system all channels in one direction are in adjacent frequency bands, and common equipment is split among the 3 channels. Repeater and regulator equipment is available only in this type of system.

The function of the control winding of the magnetic amplifier is to produce a DC premagnetization of the core by the current flowing through it.

In the diagram illustrated (*Figure* 4) with zero control current, maximum output current is obtained. In other words, the DC current pulses flowing through the gate winding are sufficient to completely saturate the cores very early in the applied voltage cycle. When negative control current flows through the winding, negative premagnetization results which delays the saturation of the core to a later time in the applied voltage cycle. The result is to reduce the average output current. The minimum current which can be obtained is largely dependent on characteristics of the core material used, the turns in the load windings, while the maximum current is dependent on the saturated impedance of the amplifier and total resistance of the load current.

As used in the charger, the control coil of the magnetic amplifier is connected between the source of reference voltage and the output voltage of the charger through the error sensing network. In normal operation the error causes a negative control to flow in the magnetic amplifier. The output current of the magnetic amplifier varies in proportion to the control current and supplies the control current for the power handling saturable reactor.

Since all closed loop systems have a tendency to be unstable, the third auxiliary winding previously mentioned is used to suppress this tendency. This winding is connected across the output of the amplifier in such a phase relation as to oppose transient charges.

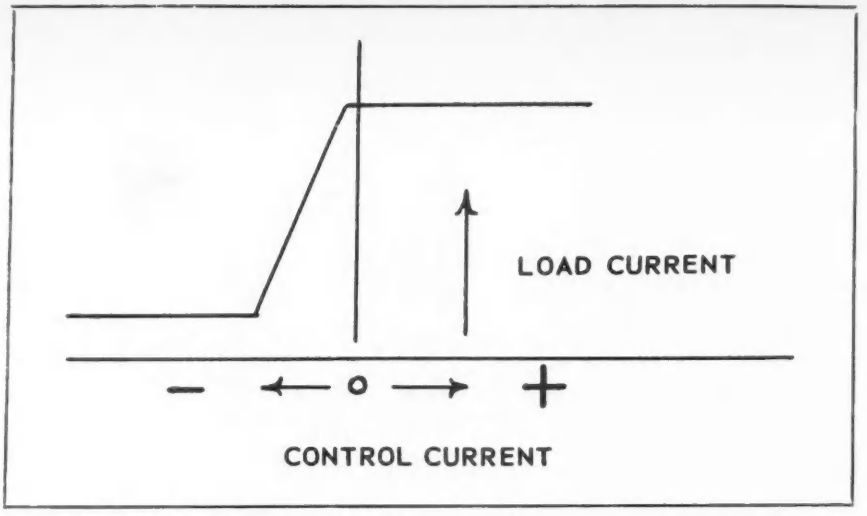

FIG. FOUR:—Variation of load current with control current changes.

Error Sensing Network: — The error sensing network is simply a resistive voltage divider which permits the setting of the signal voltage nearly equal to the reference voltage, so that the control current will be at its correct value for the operation of the magnetic amplifier.

Equalizing charge voltages can be obtained by tapping this voltage through a switch to change the voltage ratio between the output voltage of the charger and the signal voltage to the control coil.

Reference Voltage: — Many circuits may be used to provide a reference voltage that is constant with line, temperature, and time variation in the control winding of the magnetic amplifier. The three most commonly used are ferro-resonant voltage stabilizers, non-linear rectifiers (zenner diodes), and cold cathode regulator tubes.

Rectifier Network: — A bridged network of selenium rectifiers produces full wave rectification of the AC supply voltage. The AC power supplied to the rectifier network is obtained from the power transformer secondary. The selenium rectifiers must be conservatively rated and operated to insure a long life expectancy.

The regulation of the output voltage across the battery is of importance in extending battery life for reasons mentioned previously. Battery manufacturers normally recommend that the regulation should be approximately plus or minus one percent. *Figure* 5 shows the regulation curve of a 24-cell battery charger for line and load variations. In this case, the regulation is normally plus or minus one-half percent when the rectifiers are new and increases to one percent during the life of the rectifiers. The estimated life of the rectifiers used in this application is approximately ten years.

This diagram also shows the operation of the over-current protection provided in a magnetic amplifier controlled battery.

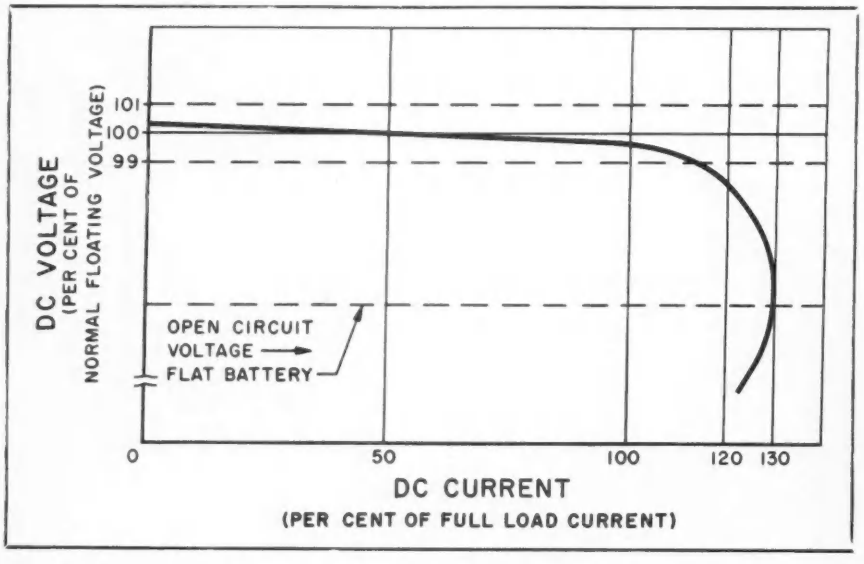

FIG. FIVE:—Regulation curve of typical magnetic amplifier controlled battery charger.

Theory Of Operation

EXAMINATION of the block diagram in *Figure* 1 will show that the circuit of the charger actually forms a closed loop.

The saturable reactor is connected

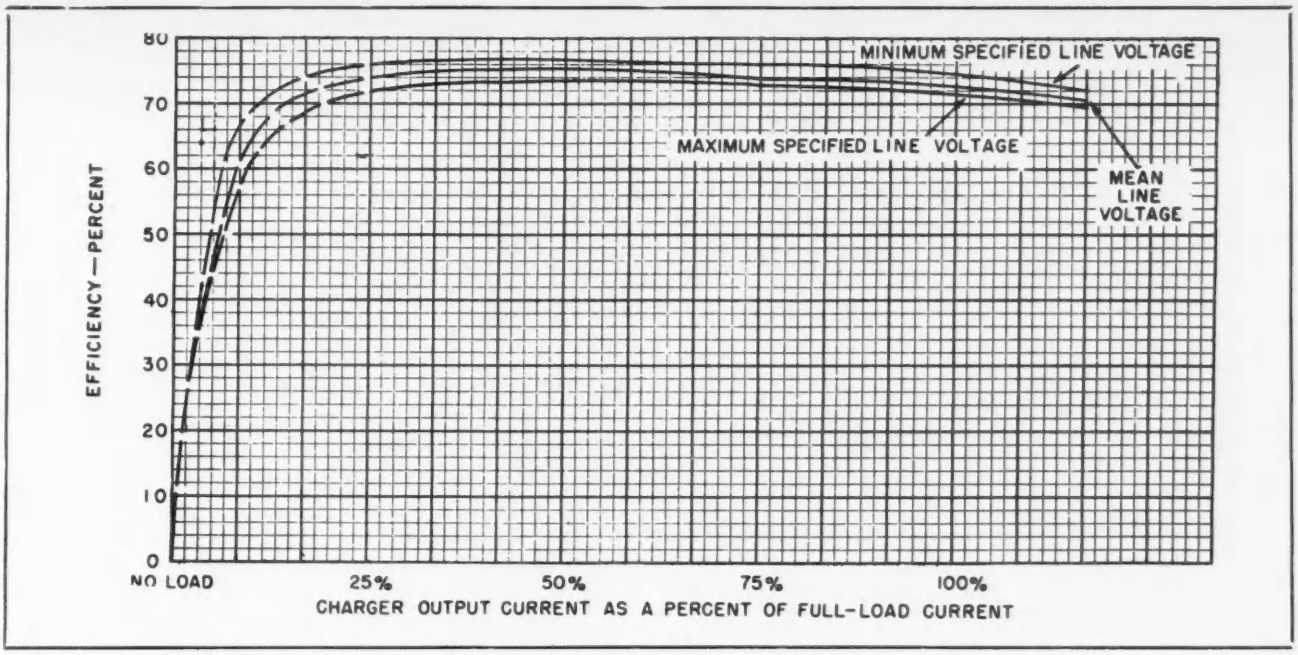

FIG. SIX:—Efficiency curve of typical 24-cell magnetic amplifier controlled battery charger.

in series with the power transformer and acts as a valve in the system. The secondary of the power transformer supplies AC power to the rectifier network where the AC is changed to DC and supplied to the output terminals of the charger.

The Feedback Circuit

ACROSS the output terminals of the charger is the feedback network. The feedback circuit keeps the magnetic amplifier informed at every instant as to output volgtage changes at the magnetic amplifier. This output voltage is compared with the constant reference between the feedback voltage, and the referenced voltage causes a current change to appear across the control winding of the saturable reactor which permits a greater or lesser amount of voltage to appear across the power transformer primary, whichever is called for at the output. This continual checking of the output voltage enables the charger to maintain a constant voltage across the battery at all times.

Voltage Increase

CONSIDER the condition where an increase in voltage appears across the charger output terminals. Starting at the output terminals, any increase in DC output is immediately picked up by the feedback network and compared against the stable reference voltage. This difference between the output and the reference voltages causes current to flow in the control circuit in such a direction as to decrease the degree of core saturation of the magnetic amplifier. With less saturation, the impedance increases and more opposition is offered to the flow of current through the gate winding. Since less current is permitted thru the gate winding, this reduces the amount of current available for the control winding of the saturable reactor. Again here, as in the magnetic amplifier, the saturation is less and, therefore, the impedance of the reactor increases. With increased impedance in the reactor, a smaller current flows through the main winding and as a result, less power is available across the power transformer primary. The smaller amount of primary power directly produces less secondary power and, therefore, lowers the output of the charger. This decrease counterbalances the increase which originally produced the error signal current to flow in the circuit.

Conversely, any decrease in charger output voltage would cause the opposite sequence of events in the control circuit and thus increase the output voltage.

Conclusion

THE efficiency that can be economically obtained using present materials in a float operated battery charger is illustrated by the efficiency curves shown in *Figure* 6. It is of interest to note that at approximately 8 percent of full load the charger is practically at full efficiency. For germanium and silicon rectifiers the efficiency is approximately 90%.

Although selenium type rectifiers are presently employed, the development of germanium and silicon rectifiers promises higher efficiency and smaller size in battery charger design. As more life experience is acquired with germanium and silicon rectifiers, commercial chargers may be expected to incorporate them.

The use of modern high performance steels and high temperature inorganic insulation has enabled a large reduction in the size of power transformers employed in automatic type battery chargers. Saturable reactors are also smaller, faster acting, and have higher power gain than previous types. The core material of the magnetic amplifier discussed is of the square hysteresis loop type which produces a high power gain characteristic of this device.

Magnetic amplifier controlled battery chargers are designed to meet the requirements of "floating" operation for charging storage batteries. Voltage regulation can be held within closed limits, and the charger can be self-protecting as far as the charger components and the battery are concerned. The use of static magnetic components and conservative design will provide the necessary low maintenance and long life expected for this type of charger. *The End.*

DOUBLE JEOPARDY in the office is demonstrated by Miss Helen Kolodziejczyk, traffic unit clerk, as she trips over an open desk drawer and incorrectly holds a pencil.

A CRACK ON THE HEAD is what Miss Patricia Huddleston, operator, is "heading" for as Helen thoughtlessly leaves the door open on her locker.

Hazard Hunt

Traffic Girls Do A "Sherlock Holmes" For Safety's Sake

By RITA WALBY

EVER GO on a "Hazard Hunt?" Traffic girls do! A hazard hunt is something like a scavenger hunt, only the Traffic girls look for safety hazards — and not the "fun items" one looks for on a scavenger hunt.

The hazard hunt has been adopted by some Traffic people as one of the means of trying to improve the safety records in their respective offices.

As part of Michigan Bell's company-wide program of encouraging employes to "think safety and do it safely," the Traffic Department has developed many methods to keep safety before its employes.

The various Traffic safety programs include the use of flip charts, films, safety meetings, bulletin board posters, open circuits from which operators hear a safe-

GOIN' FISHING? No, only Patricia showing how dangerous it is if a window pole catches a light fixture.

SMASH! Right in the eye that shell could go as Helen disconnects a cord and Patricia checks her on it.

WARM? It will be if the fire from those papers spreads — papers which have no place in an ash tray.

ty message repeated on a record, and recipe cards which carry safety messages.

Hunting the Hazards

BUT, to get back to the hazard hunt. One of the Traffic offices to use this method successfully is Detroit's Riverview Toll office, located in the Bell building.

Special forms have been designed by Traffic for this activity. The forms are really a safety check list. In the Riverview office, this list is used by two girls, members of the office safety committee, as they conduct a survey around their work area. They look for trouble — trouble which could cause mishaps and serious injury to their fellow workers.

The hazard hunt check list consists of three parts: one section covers floors, stairs and elevators; the second, switchboard equipment; and the third, doors, windows and related equipment.

What do the girls look for? Examples on the check list include such items as slippery floors and stairways, trash or material on stair landings, operators tilting their switchboard chairs backward, rough or splintered places on the switchboards, open desk and file drawers, and just about anything else which could cause an accident.

After the "hunters" have made their survey and checked their safety list, the list is turned in to their chief operator.

The chief operator (in the case of Riverview Toll, she is Mrs. Synithia E. Howard) sees that the hazards are eliminated. She might talk to the operator who was found operating the calculagraph too vigorously (because this could cause pinched fingers), or she might notify the building people to correct a faulty drinking fountain which spills water on the floor (because a wet floor could cause a fall).

However, whatever hazards are uncovered, and whatever hazards are eliminated the girls in Riverview Toll know that safety still is up to them. They find that safety consciousness can produce only one result — less accidents. And the proof of "Thinking safety" can be found in the Riverview Toll office where accidents are kept at a minimum. — *Reprinted from "The Michigan Bell."*

POOR PATRICIA! Instead of waiting for help from her service assistant who would place the chair beneath her, impatient Patricia tries to find that chair with the heel of her shoe. From the looks of it, she'll need more than pity, though, if that other foot slips and she bounces her chin on the switchboard keyshelf — a mishap sometimes occurring to operators.

basic electricity

by Van Valkenburgh, Nooger & Neville, Inc.

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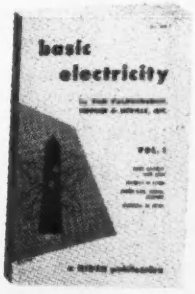

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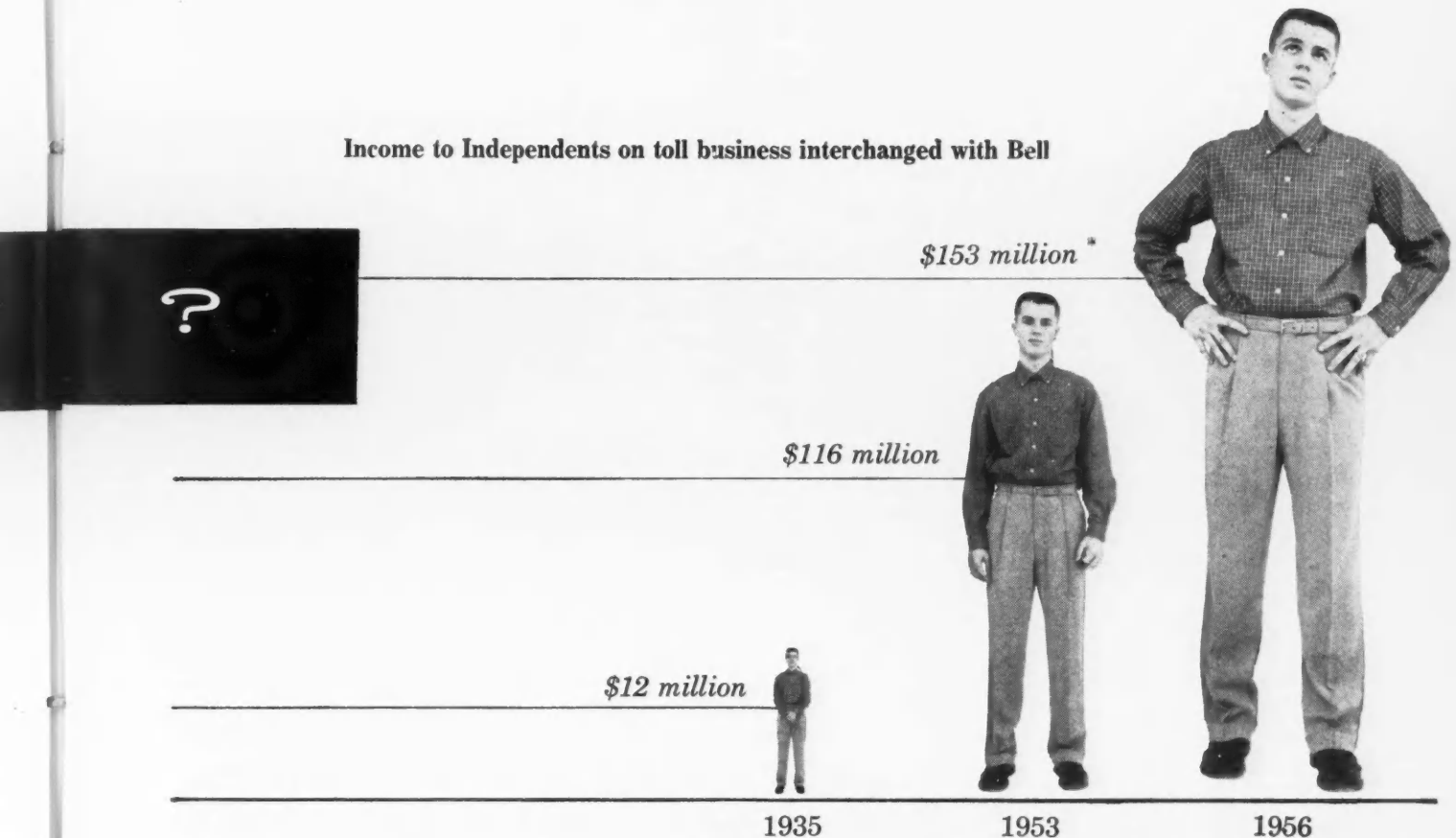

*Based on "Report of Toll Compensation and Settlements Committee" 59th USITA Convention.

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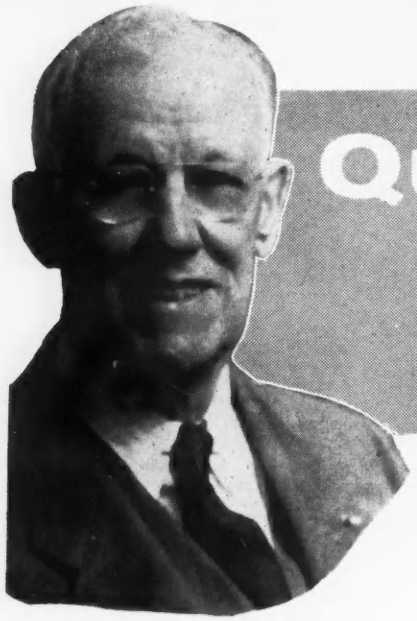

Questions and ANSWERS

Conducted by Jay G. Mitchell

This month, Mr. Mitchell discusses these subjects: (A) Proving the decibel formulas; (B) Capacitors, a clarification; (C) Read the advertising pages. If you'd like quick help on some technical problem, send an inquiry to Mr. Mitchell, Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago. A letter will bring you a quick reply. Please enclose self addressed and stamped return envelope.

Proving The Decibel Formula

QUESTION: — *In the recently printed series of articles in "Telephone Engineer & Management" on the Decibel Calibration two formulas were set out which, given the observed alternating current voltage in any given case, made it very simple, even to a mathematical novice to determine the decibel equivalent. We found this material very helpful as we were so fortunate as to have a high grade accurate alternating current voltmeter with a low 0 to 10 volts direct reading scale. Since we have access to very much telephone literature we would be grateful to you if you would describe a method of reversing the formulas and, for a given decibel reading, explain how to determine the corresponding alternating voltage. In other words will you be so kind as to explain how to* reverse *the formulas published, as a check on the primary computation of the decibel from the voltage, by illustrating the computation of the alternating voltage corresponding to any value for the decibels. Thank you.*

ANSWER: — This is a very practical inquiry and *Questions And Answers* is indebted to the author for sending it. This is because a brief explanation of the solution of the formula cannot but add to the understanding of this subject which appears to be on the way to become very necessary indeed in modern communication plant miantenance.

Since the decibel (Db or Dbm) is a logarithmic function of the alternating voltage it is, of course, necessary to make use of logarithmic tables to a small extent in the application or proof of the formulas. Two typical illustrations will be given.

(a) When the decibel value (Db) is minus three (—3.0) what is the corresponding alternating voltage?

Since the inquiry uses the term decibels (Db) it refers to the conventional 500 ohm loop, 0.006 watt unit. In this unit the number of decibels (Db) is ten times the logarithm of the ratio of the number of volts squared and 3.0. In another form this may be stated: One tenth the decibels (Db) equals the logarithm of the number of alternating volts squared minus the logarithm of 3.0. Therefore:

Minus 0.3 (1/10 of —3.0) equals the logarithm of the alternating volts squared minus the logarithm of 3.0.

Minus .3 is a logarithm and may be written as 9.70000 — 10

The logarithm of 3.0 is .47712

The logarithm of the number of alternating current volts squared, by the formula, must therefore be the sum of these two logarithms or .17712. This is to be divided by 2 to determine the logarithm of its square root, the number of alternating current volts. By this division it is clear that the logarithm of the number of alternating volts is 0.08856 which is the logarithm of 1.23, the alternating volts which in a 500 ohm, 0.006 watt loop will result in the power of minus 3 decibels (Db).

(b) When the decibel value (Dbm) is minus 8 (—8.0) what is the corresponding alternating voltage?

Since the inquiry uses the term decibels (Dbm) it refers to the conventional 600 ohm loop, 0.001 watt unit. In this unit the number of decibels (Dbm) is ten times the logarithm of the ratio of the number of volts squared and 0.6. In another form this may be stated: One tenth the decibel (Dbm) equals the logarithm of the number of alternating volts squared minus the logarithm of 0.6. As in illustration (a,) therefore minus 0.8 equals the logarithm of the alternating volts squared minus the logarithm of 0.6.

Minus 0.8 is a logarithm and may be written as 9.20000 — 10. The logarithm of 0.6 is 9.77815—10.

The logarithm of the number of alternating current volts squared, by the formula, must, therefore be the sum of these two logarithms or 18.97815 — 20. This is to be divided by 2 to determine the logarithm of its square root which is by definition the number of alternating current volts. Making this division 9.48908—10 is the result and this is the logarithm of 0.309 which is the number of alternating current volts.

It is sincerely hoped that the reader will master each step of this somewhat difficult problem because by so doing the entire subject of the relationship between the alternating current voltage and the decibel value will be clearer.

Capacitors — A Clarification

QUESTION: *Questions And An-*

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He's doing something else—
maybe he's putting up another one.
Anyway, he did this job all alone
in less than five minutes—
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This STRANDVISE guy was put up complete before any tensioning tools were applied to the strand

swers has received a very constructive letter from Mr. Ralph B. Ritter in commenting, among some other things, on the very much condensed explanation of the conventional symbols used in a very old schematic circuit which was under study by another group of the readers of this material. Mr. Ritter's criticism was very helpful but not exactly directly applicable to the simple basic schematic to which it was intended to have reference.

ANSWER: The use of standardized symbols in schematic circuits, especially in electronic circuits, has long been proven to be very advisable. That this fact is well established is known to every engineer and technician that finds it necessary to design or analyze the innumerable circuits that confront him. This fact is demonstrated by the several efforts that have been made to tabulate and classify such symbols in some permanent form for ready reference. Under date of March 29, 1954 *The American Institute Of Electrical Engineers* issued an approved bulletin entitled "*American Standard Graphical Symbols For Electrical Diagrams*" which, it is thought, can be obtained from the Institute. The use of this bulletin, in circuitry, is recommended until some other and more complete literature on the subject is available. Comment from the telephone engineering field would be appreciated.

The following comment is submitted as a more accurate statement of the characteristics of the electrolytic capacitor than the one published which was correct in a very limited and explanatory sense only. It will be correct if the electrolytic capacitor be considered as a development of the electrolytic rectifier which, in its simplest form, is a half-wave rectifier with physical dimensions fixed by the character of the circuit and the magnitude of the load assigned to it. Strictly the device is *not*, as was incorrectly stated, a conductor of direct current in one direction and of alternating current in both directions. Rather it is in reality a rectifier (half-wave) with a possibility of maintaining unidirectional voltage while conducting alternating current, the impressed voltage and the other characteristics being functions of the design and the dimensions.

QUESTION: In your Question And Answer column on "Elements of a Rate Case" you referred to an independent telephone company which inquired about their change of rates. Please inform us of the name and address of this company.

ANSWER: This inquiry has, of course, been treated as a confidential communication from a telephone company. It is suggested that an advertisement in "*Telephone Engineer & Management*" might be very likely to direct the attention of all companies requiring this type of service to agencies offering it. — *Jay G. Mitchell.*

Ohio Independents Meet

550 Attend 62nd Annual Meeting: James I. Hunt Elected President

TELEPHONE management people from all parts of Ohio and the nation gathered in Columbus, from April 15-17 to attend the 62nd annual convention of the Ohio Independent Telephone Association. This year more than 550 delegates and their guests attended the two-day annual convention and telephone equipment exposition.

Theme of the 1957 convention was "Tomorrow's Progress Is Today's Planning." Speakers centered their talks around this theme, stressing the fact that the new electronic arts in the field of telephony will create more jobs, more skills and more customer satisfaction.

Principal speaker at this year's convention was Donald C. Power, president of the General Telephone Corp. and the United States Independent Telephone Association.

In his talk Power told his audience "It is a sobering fact that our telephone industry, within barely three quarters of a century from its birth, is now handling by far the greater part of the entire load of really important personal and business communications in the United States."

"Bell and Independent companies," he said, "are now handling daily telephone conversations in the order of two million calls — more than double the volume handled at the end of World War II in 1945."

Speaking on the subject "Planning Today for Tomorrow's Progress," Power said the Independent companies are situated in a favorable position for future business growth, if it is properly cultivated. He pointed to subscriber stations growth in Ohio as proof that such a development is well underway.

In his talk, Power pointed out that planning is everybody's job, in every part of the telephone business.

"Too often," he said, "some of us may be inclined to look on planning as the exclusive responsibility of top-level management — something for the front office to worry about. But when we get right down to hard facts, management is usually at the receiving end of the raw data, the statistics, the estimates, the timetables, and proposals which must be contributed in the first instance from the operating and specialized branches of the industry.

"The engineers and research experts, the accountants, the financial and regulatory experts — these are the people who know from actual experience what can be done. True, the end result, the final decision on planning must be that of a company's management. But that usually takes the form of a translation and coordination of the ideas and proposals passed along by others without which management could not make sound decisions. So, I repeat, planning is everybody's job to a certain degree."

The convention opened with a fellowship program followed in the evening by an organizational meeting of the Buckeye Chapter of the Independent Telephone Pioneer Association. Richard N. Cole, general commercial superintendent, General Telephone Co. of Ohio, Marion, acted as chairman of the organizing committee and presided over this first meeting of the group.

Business sessions featured a series of conferences of the Accounting, Commercial, Plant-Equipment and

Traffic groups. Speakers at these conferences included Robert H. Henderson, controller; Joseph Sharp, installation supervisor; and Marvin R. Johnston, commercial engineer, all of the General Telephone Co. of Ohio, Marion; Baxter H. Case, manager, Chardon Telephone Co., Chardon; Dr. Laurence J. Taylor, vice president, Hillsdale College, Hillsdale, Mich.; Rolf G. Till, plant manager, Wellington Telephone Co., Wellington; W. W. Tripp, plant personnel supervisor, Cincinnati & Suburban Bell Telephone Co., Cincinnati; James I. Hunt, president, Home Telephone Co., Middlefield; Otto F. Kinsel, plant engineer, Northern Ohio Telephone Co., Bellevue; F. H. Wood, plant superintendent, Western Reserve Telephone Co., Hudson; J. L. Robb, executive vice president, Superior Cable Corp., Hickory, N. C.; Miss Helen Clark, traffic superintendent, Commonwealth Telephone Co., Athens; A. C. Zeller, toll traffic engineer, Gustav Hirsch Organization, Columbus; and J. H. Leckenby, traffic superintendent, Northern Ohio Telephone Co., Bellevue.

Also during the second day's meetings the delegates were welcomed to Columbus by Delmar Starkey, general manager of the Columbus Area Chamber of Commerce, and heard talks by Everett H. Krueger, Jr., chairman of the Ohio Public Utilities Commission, and Robert R. Dobbin, chief engineer, Stromberg-Carlson Co., Rochester, N. Y.

Highlighting Tuesday's' activities was the annual banquet. The guest speaker for this occasion was Judge Earl R. Hoover, Common Pleas Court, Cleveland. Judge Hoover entertained the group with his talk "OK — It's the Bunk, Or So You Want To Be A Politician."

WINNERS of Ohio Independent Telephone Association's annual Community Service Award plaques (left to right): RICHARD H. RAWLINGS, vice president, General Telephone Co. of Ohio, Marion; ROBERT P. KAUFMAN, vice president, Continental Telephone Co., Continental; WELDON W. CASE, president, Elyria Telephone Co., Elyria; JAMES C. HAGEMAN, vice president, Lorain Telephone Co., Lorain; RAYMOND J. MAXWELL, general manager, Mansfield Telephone Co., Mansfield; PAUL KAUFMAN, public relations director, Northern Ohio Telephone Co., Bellevue; and CLARE E. WILLIAMS, president, Ohio Consolidated Telephone Co., Marion.

On the final day of the convention, delegates attended a panel program, "PUCO Viewpoints," moderated by Ohio Public Utilities Commissioner Ralph A. Winter. The panel was composed of four staff members of the Commission, namely Paul E. Weiland, chief engineer; James L. Fullin, Jr., attorney examiner; Edward E. Knaub, chief accountant; and Clyde J. Reid, supervisor, rate section.

As one of the features of the closing day of the convention, Community Service Award plaques were presented to seven Ohio Independent telephone companies. Those receiving the award included The Elyria Telephone Co., Elyria; The Mansfield Telephone Co., Mansfield; Northern Ohio Telephone Co., Bellevue; The Lorain Telephone Co., Lorain; Ohio Consolidated Telephone Co. and General Telephone Co. of Ohio, both of Marion; and Continental Telephone Co., Continental. Presentation of the awards to executive representatives

Please turn to page 54

JAMES I. HUNT, left, president, Home Tel. Co., Middlefield, and newly elected president of Ohio Independent Telephone Association, discusses convention activities with RALPH A. WINTER, center, PUCO commissioner, and ROBERT R. DOBBIN, chief engineer, Stromberg-Carlson, Rochester, N. Y., a guest speaker at the 1957 convention.

A modern home with

This month and next some 18,500,000 readers of nine leading women's magazines will meet the Koehler family of Indianapolis. The introduction will be through a full-color Bell System advertisement headlined "Having phones handy is such a help."

The Koehlers tell what their four color telephones mean to them in terms of comfort, convenience, pleasure and beauty. We think their story will be interesting reading for housewives throughout the country.

Advertising that makes the public aware of the value of additional telephones around the house should stimulate sales that benefit the entire telephone industry.

BELL TELEPHONE SYSTEM

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EXPERIENCED
technical personnel?

No need to look outside your organization when trained, technically qualified personnel within your own company can be upgraded to fill more important jobs. These Rider books designed for industrial upgrading are now proving themselves in training programs now being conducted by the nation's top firms—telephone companies, manufacturers, utilities.

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This is the fabulous "Common Core" training program so successfully used by the U. S. Navy to teach over 25,000 Navy students the basics of electricity and electronics. Now for the first time this material is available for civilian training programs. Over 2,000 big "Show-how" drawings make every phase picture clear.

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of these companies was made by OITA President, Weldon W. Case.

Awards were made by those companies judged to have performed the most outstanding jobs of improving public understanding of the Independent telephone industry during the past year. Entries were judged by members of the Columbus Chapter of the Public Relations Society of America.

Final business conducted by the delegates was the election of six members to the board of directors for three-year terms. Delegates elected Raymond J. Maxwell, general manager of the Mansfield Telephone Co., Mansfield, as a new member of the board of directors. Directors re-elected are: William C. Henry, president, Northern Ohio Telephone Co., Bellevue; Ralph F. Mateer, general manager, Warren Telephone Co., Warren; J. Warren Safford, president, Troy-Tipp Telephone, Inc., Troy; R. R. Waltz, president, Delta Home Telephone Co.; Delta; and Howard Wright, general manager, Ashtabula Telephone Co., Ashtabula.

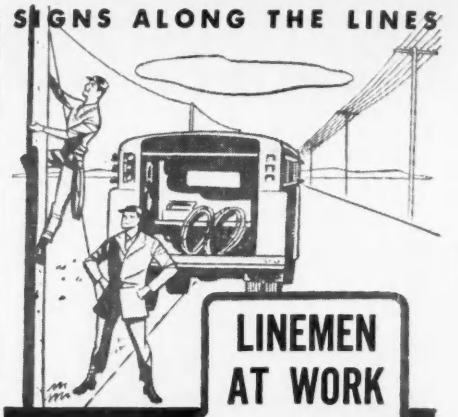
The Board of Directors elected James I. Hunt, president of the Home Telephone Co., Middlefield, as president, 1957-58. At the same time, the directors named H. F. Clapper, general manager of the Ohio Telephone Service Co., Greenville, vice president, and Daniel W. DeHayes, Columbus, as executive vice president and secretary-treasurer.

Final guest speaker at this year's convention was Edward J. Hegarty, management consultant from Mansfield, Ohio, who spoke at the luncheon on Wednesday. Subject of his talk was "Human Relations In Management."

A special activity on the final day of the convention for women delegates and their guests was a Continental style breakfast in the Deshler Hilton's Sky Room during which time Nita Hutch, mistress of ceremonies for a local radio station whose program originates from the Sky Room each noon, conducted a facsimile of her show which consisted of interviews with the ladies in attendance.

Delegates from nearly all of the 105 member companies comprising the Ohio Independent Telephone Association, attended the convention. These companies now serve a total of more than 743,000 subscribers.—*Daniel W. DeHayes.*

SIGNS ALONG THE LINES



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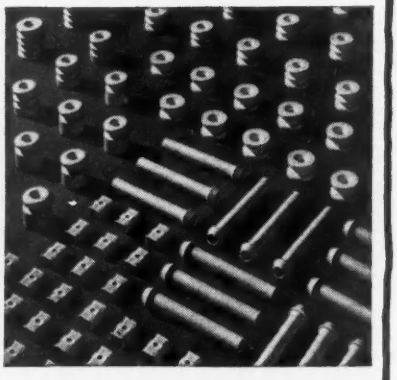

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Bay State High Court OK's Phone Book Covers

THE Massachusetts Supreme Court ruled last month that the placing of plastic covers on telephone books is not trespassing on property of the telephone company.

In a 20-page decision, the court upheld dismissal of a telephone company suit against the National Merchandising Corp., and Ralph M. Barford. The suit charged the corporation and Barford were interfering with the company's business and that placing the covers on telephone books "constitutes a trespass upon the telephone company property."

The court said a telephone subscriber keeps the directory in his home and can use it as he sees fit "can mark it up, makes notes on it."

The Supreme Court denied the company's argument that the national firm was selling as its own a product put together by the telephone company. "What is being supplied is a convenient, attractive and ingenious accessory for use with telephone directories," the decision said.

Commission OK's Rate Boost For Allied Telephone

THE ARKANSAS PUBLIC Service Commission has approved telephone rate increases totaling $17,847 for the Allied Telephone Co., which claimed it had lost $20,500 a year through a change last December in its working arrangement with Southwestern Bell Telephone Co.

Allied leases its long-distance lines from Southwestern Bell. Previously all long-distance calls were handled by local operators and Southwestern Bell paid Allied a toll commission. Under the new arrangement the calls are handled through Southwestern Bell exchanges in nearby towns and the amount of the commission has been reduced.

Allied said it also needed the rate increase to give its employes an 8 per cent pay raise.

The PSC estimated that the higher rates would give Allied only a 4.78 per cent return on its investment.

Donald C. Power Receives Public Service Award

DONALD C. POWER, president of General Telephone Corp., last month received the Distinguished Public Service Award given annually by the American Society of Tool Engineers at a regular meeting sponsored by the New York Chapter. The Award was made by Hartley W. Barclay, past chairman of the Greater New York Chapter and publisher of *Tide Magazine*.

In making the award, Mr. Barclay referred to Mr. Power's activities as "through this joining of science, education, public service, finance and communications, such an important broadening of public gains has been made that it is an honor and a privilege for this citation to be awarded to Donald C. Power, whose deep insight into America's needs, capabilities and opportunities made this achievement possible."

Following the award, Mr. Power addressed the Society on "Merchandising — Key to the Future," in which he emphasized the importance with which General Telephone views the subject of market research and planning as a basis for developing future growth.

DONALD C. POWER

Rate Boost OK'd For Vernon (N. Y.) Tel. Co.

THE NEW YORK Public Service Commission has accepted a tariff amendment filed by Vernon (N. Y.) Telephone Co. designed to increase rates by an estimated $6,900 annually. The company provides telephone service in and near Vernon and Vernon Center. It expects to be serving more than 1,000 stations by the end of this year as compared with 600 in 1950.

In seeking permission to increase its rates, the company reported that its plant investment has increased from $94,000 in 1950 to $255,000 at present. In order to improve service, it has eliminated 10-party service in its rural territory, providing indi-

construction and maintenance DIGEST

- **Power for long life**
- **Perfect protection**
- **Slick slack puller**
- **Indoors or out**

Published regularly to help you get the most out of your materials and supplies dollar

by Joseph W. Mullin, Inside Sales—Kansas City

My pet hobby is photography. Maybe you've noticed yourself—a double exposure can be mighty interesting. For instance, when you order supplies from Stromberg-Carlson you see **two** big benefits in the picture. One, you get fine products with a two-fold guarantee—ours and the maker's. The guarantee is backed by our 62-year reputation. And here's the other. Your support gives the science of telephony a push forward. As you know, this industry is a full-time job with us. Your supply orders help us continue research for new and better telephone equipment. So we say a heartfelt "thanks"—it's a pleasure to serve your supply needs.

Battery life prolonged by strong plates.

The Exide-Tytex Battery is a flat plate type specially designed to give long life. In addition, it offers the advantages of high capacity in relatively small size. Hence it is preferred in many telephone applications.

One of the most important features of the Exide Tytex Battery is the construction of the positive plate. The exclusive, patented Silvium grid resists corrosion—prolongs battery life. Specially shaped horizontal grid bars lock the active material firmly to the plate while presenting only a minimum of exposed metal to the electrolyte. This also effectively shields the grid against corrosion and at the same time insures that every plate will have a maximum of active material in contact with the electrolyte—for higher capacity. Every fifth horizontal bar is 300% thicker in order to give the plates extra strength.

Molded plastic jars require considerably less space than needed by conventional cells. This makes it possible to put more battery capacity into a given amount of shelf area.

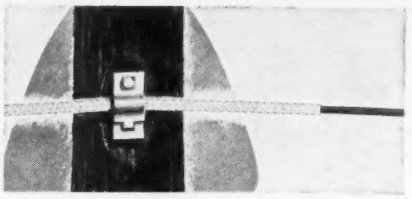
Your Stromberg-Carlson representative can offer prompt delivery on your order.

Protects plastic cable from pressures, abrasion

Ties, clamps, trees and other objects are rough on plastic-covered self-supporting cable.

The perfect protection is a Preformed Line Guard—available in metal or plastic.

Metal line guards are specially useful for supporting cable at poles. They are a must for tangent supports. They spread the pressure around – preventing slippage **and** preventing damage to the plastic covering.



Available in standard 6-ft. lengths. Other lengths on request.

Plastic line guards are ideal for protecting and insulating conductors that pass through trees, close to buildings, or over other lines.

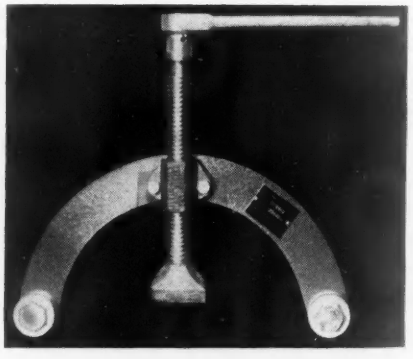
Both install easily. Just wrap them around cable. You need no tools, no clamps or clips.

For sure protection, specify Preformed Line Guards in metal or plastic when you order through your Stromberg-Carlson representative.

Take up slack With a twist of the wrist

Rugged! Easy to use! Rust-protected! Here's a real he-man tool, in compact size.

The LG12 Little Giant slack



"Little Giant" makes cable slack pulling easier.

puller consists of a ¾" x 2" hot-rolled steel yoke, with 2" cold-rolled steel rollers attached to the yoke by a ¾" steel shoulder stud.

Tightening screw is finest steel with 1" square thread. Ratchet handle, designed for easy action, or ½" cold-rolled steel slip handle with free slippage within the screw head. All steel cold-rolled parts are cadmium plated. Steel yoke is painted.

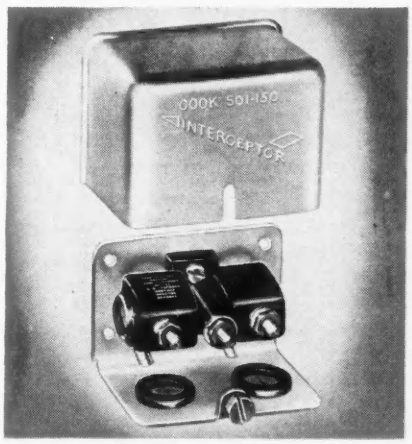
Width: 20". Height: 15". Weight: 18 lbs.

For indoor or outdoor use

Enjoy greater economy with the "Interceptor" fuseless substation protector, made by Cook Electric Company for use at subscriber stations where the omission of fuses is sanctioned by the National Electric Code.

The unit consists of a Bakelite base with heavy terminal and ground studs. Both line circuits are protected by Cook Minigap or Mytigap protectors.

The "Interceptor" can be used indoors or out. Indoors it mounts directly in a convenient location.



Fuseless Substation Protector.

Outdoors it is fitted with a mounting bracket and cover for home, pole or cross-arm installation.

For outdoor mounting the "Interceptor" is fully enclosed in an all-metal weatherproof housing with neoprene grommets which seal the dropwire and ground entrance.

For economy *plus* protection, order from your Stromberg-Carlson representative.

Did you know . . . that the Stromberg-Carlson general catalog has more than 100 pages of maintenance and construction supplies alone? You can do *all* your business "under one roof" and find the same quality and reliability in every item.

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vidual and four-party line service within its base rate area and five-party service in points beyond. It reported also that it has completed the installation of a 20-line addition to the dial equipment at its Vernon exchange and that a further 100-line addition, equipped initially for 50 lines, will be completed by September 30.

Evidence submitted by the company indicated that its operating expenses for the year ending April 30, 1958 will exceed those of 1956 by an estimated $7,000, an amount approximately equal to the additional revenues to be derived from the rate increase.

Under its new tariff, the company will increase monthly charges for residential party-line service by 60 cents; for individual residential service and for business party line service by $1.00, and for individual business service by $1.25.

REA Names Streukens Telephone Section Head

APPOINTMENT of George L. Streukens as head of Section 3, Telephone Operations and Loans Division, has been announced by the Rural Electrification Administration. Section 3 includes the states of South Dakota, Nebraska and Kansas.

Streukens succeeds Rolland W. Mars who recently accepted another position in government service.

Prior to his appointment as section head, Mr. Streukens was an REA field representative and had served as an assistant section head in the Telephone Operations and Loans Division. He joined the REA staff in 1950. Before that he was employed by the Pioneer Telephone Co., by the U. S. Employment Service and by the U. S. Department of Labor. He served three years in the Army and attained the rank of major.

Minnesota Independent Sold To New Corporation

ARTHUR A. RUDLOFF, president of the Lake Crystal Telephone Co. has announced that subject to Minnesota Railroad & Warehouse Commission approval he has sold his company to a new corporation being formed as a subsidiary of the Mankato Citizens Telephone Co., Mankato, Minn.

Mr. Rudloff stated that conversion to dial operation of the exchange at Lake Crystal will proceed with the tentative date being August 1st for the cutover to the new equipment.

Mr. Rudloff will remain in an advisory capacity during the completion of work necessary for the cutover and for such time thereafter as his permanent plans will permit.

The Lake Crystal company serves 976 subscribers in two exchanges at Lake Crystal and Cambria.

Wisconsin Independent Buys Three Small Companies

LAST MONTH the St. Croix Telephone Co., New Richmond, Wis., was authorized by the Wisconsin Public Service Commission to purchase the Star Prairie (Wis.) Rural Telephone Co-operative, serving 70 customers, for $2,200; the Wagon Landing Rural Telephone Co., Star Prairie, serving 28, $200; and the Cylon Rural Telephone Co., New Richmond, serving 77, for $1,000.

The commission also authorized St. Croix Telephone to begin service to some subscribers now served by the Stanton Rural Telephone Co., the Williow River Rural Telephone Co., and the Boardman Rural Telephone Co., all in the New Richmond area.

Tidewater Telephone Co., Gets Rate Increase

THE TIDEWATER Telephone Co., Warsaw, Va., has been authorized to increase rates.

An order issued by the Virginia Corporation Commission said the new schedule of rates sought by the telephone company was "reasonable and just."

At the same time, the commission ordered the company to "forth-with enter upon a study of the feasibility and practicality" of installing automatic cutoffs.

The cutoffs, which would limit telephone conversations to a fixed number of minutes, were said to be needed by several opposing witnesses at a hearing before the commission on March 7.

The new monthly rates are as follows:

Business telephones: Individual line, $9; two-party line, from $6.25 to $8; four-party line from $5.50 to $6.50; multi-party line, from $5.50 to $6.25, and extension service, from $1.50 to $1.75.

Residential telephones: Individual line, $6; two-party line, $4 to $5.50; four-party line, $3.50 to $4.50; multi-

Advertisement

How Often Do You Service Your Automobile Spark Plugs?

PERHAPS, after 10,000 miles of trouble-free service, perhaps 20,000 or maybe not at all.

In 10,000 miles of driving, however, each of your automobile spark plugs has fired more than 15,000,000 times in an atmosphere of vaporized hydrocarbons and at a temperature approximately 1800°F. During the explosion the cylinder head pressure is sustained at 150 pounds per square inch and the peak pressure at the instant of explosion is approximately 800 lbs. per square inch or equivalent to the impact of a steam driven pile driver. These conditions are obviously extreme. However, they do establish a standard or series of parameters from which to design a trouble-free lightning arrester.

By simulating the design features of the spark plug and adapting the materials employed to telephone arresters, Cook Electric Company engineers have created a new concept in lightning arrester design. The Mytigap lightning and surge arrester is the resultant product. This new arrester, in fact, also contains an additional advancement in the simple self-restoring feature which further reduces maintenance attention.

The new Mytigap arrester employs no carbon or organic material in its construction. Its discharge electrodes are an alloy of nickle, manganese and RU78. A similar material is used for the electrodes in automobile spark plugs and withstands the arcing and oxidation better than other known material.

For sample, literature and additional information see your distributor or telephone supply salesman.

Exploded View of Cook Mytigap Arrester.

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Aerial Tents
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Cable Blocks
Cable Lashers
Coaxial Cable Tools
Lashing Wire Clamps and Grips
Portable & Power Reels

The C Resin Compounded activator, when mixed together, produce the proper proportion of flowable compound, known as one unit, to produce a plug or dam when desirable to sectionalize cable and seal cable terminals. The compound and activator is packaged in two sizes: regular size 50 gram compound and 19 gram activator, large size 168 gram compound and 64 gram activator. Additional information is available on installation and on the tools required.

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party line, $3.50 to $4.25, and extension service, from $1 to $1.25.

Another category of rates which will be increased are exchange line mileage charges. These are extra charges imposed on all subscribers who are more than one mile from the exchange, with the exception of multi-party line subscribers.

New York Central Appoints Two Communications Engrs.

LAST MONTH the New York Central Railroad Co. appointed John E. Schmitt to the position of Communications Engineer, Western District, with headquarters at Cleveland, Ohio, and named Richard L. Straw, Communications Engineer, Eastern District, with headquarters at Syracuse, N. Y.

Mr. Schmitt was formerly telephone engineer with the Eastern Illinois Telephone Co., Rantoul, Ill.

Mr. Straw was Transmission Engineer with the General Telephone Co. of Wisconsin with headquarters at Plymouth, Wis.

General of S. W. Reports New Rate Increases

THE FOLLOWING rate increases became effective in exchanges of General Telephone Co. of the Southwest during the month of April:

Exchange	Effective Date	Old Rates	New Rates
Bronte, Texas	Apr. 23, 1957		
Conversion to Dial	Bus.-1-Pty.	$7.50	$9.50
	2-Pty.	6.00	7.50
329 Stations	Res.-1-Pty	4.50	4.75
	2-Pty.	3.50	4.00
	4-Pty.	....	3.50
Naples, Texas	Apr. 7, 1957		
Conversion to Dial	Bus.-1-Pty.	4.50	10.00
	2-Pty.	3.50	8.50
396 Stations	Res.-1-Pty.	2.75	5.00
	2-Pty.	2.25	4.25
	4-Pty.	....	3.75

New All Plastic Switchboard Cable

AN IMPROVED all-plastic switchboard cable has been developed by engineers of General Telephone Laboratories and General Cable Corp. The new product, which will be manufactured by General Cable, will be furnished with most switchboards shipped by Automatic Electric Co. after June 1, and will ultimately be standard with all Automatic Electric switchboard installations.

It is the first cable of its kind to be manufactured in this country and requires specially designed equipment to produce, according to a joint

announcement by Automatic and General Cable.

The tinned-copper conductors, which are not coated with enamel, are insulated with a superior grade of color coded semi-rigid polyvinyl-chloride plastic. This color coding is unique, the announcement states, in that multiple colored compounds are spirally extruded simultaneously over the conductor to produce colors in required combinations and sequence. The colored stripes are therefore uniform throughout the insulation thickness and cannot wear off.

Color coding conforms to existing standards, with two exceptions. The 12- and 22-conductor cables are specially coded so that they may be used as either pairs or as singles for a signal cable.

Insulation shrinkage in soldering tests has been no more than 1/32nd of an inch, compared to as much as 1/4th of an inch in some other plastic conductor insulations.

A nylon rip cord is incorporated immediately under the jacket to facilitate removal of the jacket during installation.

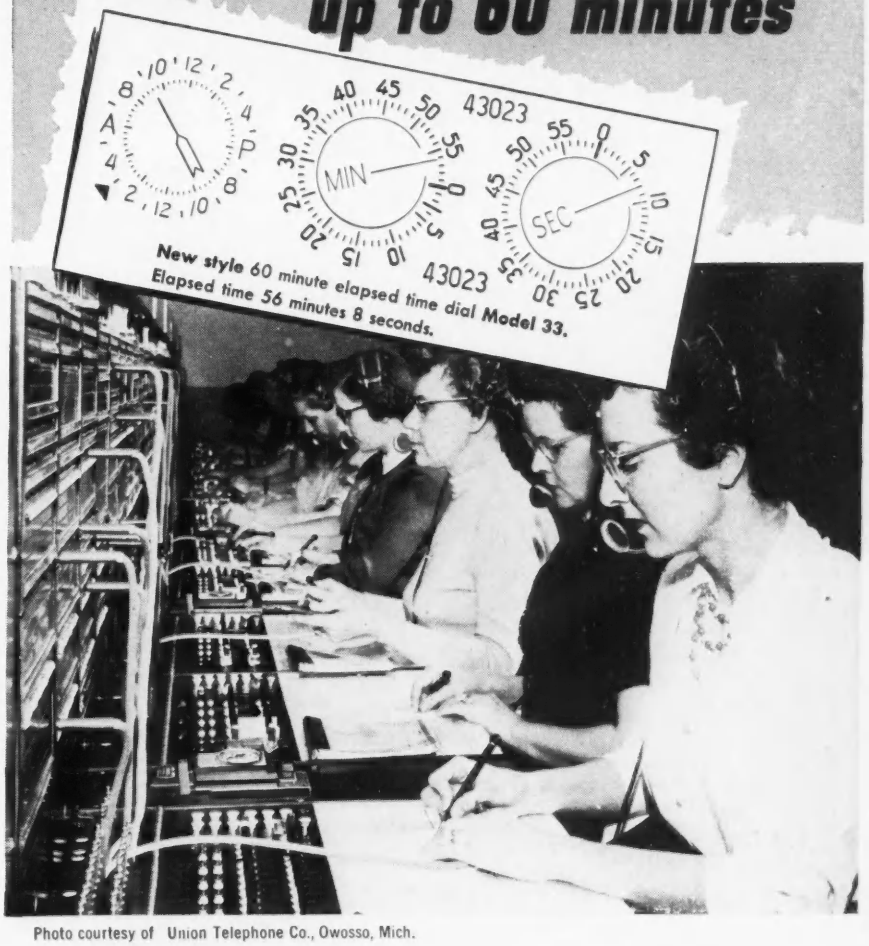
The new cables are of layer or unit-type construction. Some will be available in either round or oval shapes. Color coding in the new cable is not carried beyond the first 20 pairs and 20 singles of the standard color code. It is sometimes necessary, therefore, to repeat the same color coded conductors. To avoid confusion, such cables are of unit construction, with each unit separately bound by a different colored binder to facilitate complete identification.

The conductor assembly is held together by a textile binder. A paper wrapper or barrier is applied over the assembly and a heavy tough grey vinyl protective jacket is extruded over all. No wax coating is used anywhere in the cable.

A major advantage of the new switchboard cable, according to the announcement, is that it will allow telephone companies to substantially reduce their inventory. Three classifications of textile cable are now used in the industry; humid, non-humid, and lead-covered. The new all-plastic cable serves the purposes for which all three were designed, and makes it possible for telephone companies to reduce the types and sizes of cable they must stock from almost 100 to 21.

CALCULAGRAPH

Now Automatically gives you accurate Toll Call Records— up to 60 minutes



New style 60 minute elapsed time dial Model 33. Elapsed time 56 minutes 8 seconds.

Photo courtesy of Union Telephone Co., Owosso, Mich.

Now, Calculagraph, the modern dependable computer, automatically figures and prints toll calls up to 60 minutes —no need to add 30 minutes on long conversations.

Thus, Calculagraph adds one more feature to reduce human errors by busy operators and increases the volume of calls handled per operator. Assures you of all revenue due on every call.

For accurate toll call records, for automatic computation of elapsed time, for more efficient operation, install the new 60-minute elapsed time Calculagraph on your switchboard.

Information on this new Calculagraph is yours upon request.

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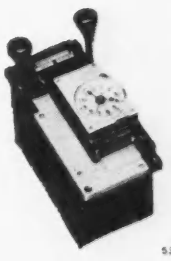

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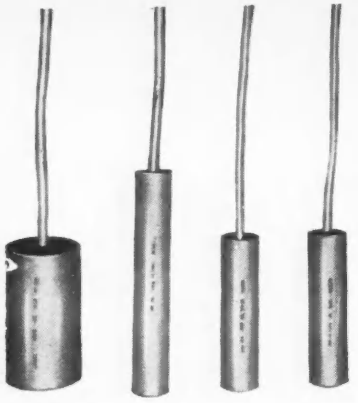

Application of Loading Coils on telephone circuits reduces unit loss to ⅓ or ¼ the nonloaded value—coils are designed for use on 2-wire telephone circuits in non-quadded paper insulated or plastic cable. COMMUNICATION EQUIPMENT & ENGINEERING CO.

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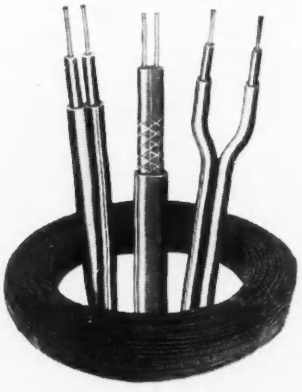

Long Service Life and Low Plant Costs go hand in hand with the installation of ENDURPRENE — The Neoprene Drop Wire available in both Copperweld and Bronze. This flexible and easy-to-handle wire is made by GENERAL INSULATED WIRE WORKS, INC.

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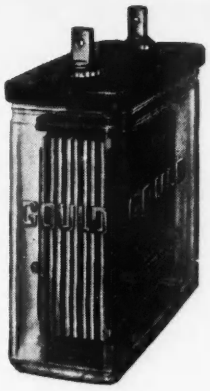
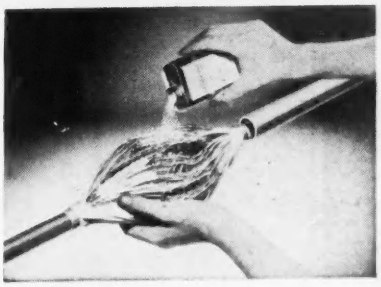


Outstanding Battery Performance is yours when you choose Gould Plante Batteries. Thick, grooved, pure lead positive plates give many years of trouble-free service! Made by GOULD-NATIONAL BATTERIES, INC., the finest money can buy.



Simple and Effective! The quick, easy, positive way to dry splices in lead-covered cable is to sprinkle Drierite Dessicant granules in among the conductors. This W. A. HAMMOND DRIERITE COMPANY product will not harm the sheath, conductors, or insulation.

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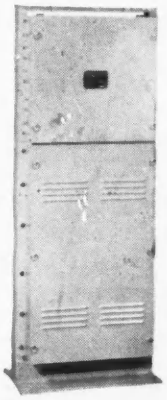

H-5 Subcycle for Harmonic Ringing Frequencies. Produces all frequencies in harmonic series, 16⅔, 25, 33⅓, 50 and 66⅔ cycles. Ringing frequencies locked to AC line frequency. Maintenance-free operation. A product of LORAIN PRODUCTS CORPORATION.

Single and Multiple Natco Clay Conduit for the permanent protection of underground telephone and telegraph cables against fire, corrosion, electrolysis, mechanical injury, and chemical attack. Available in 1, 2, 3, 4, 6, 8 and 9 duct sizes—salt glazed or unglazed. A product of NATCO CORPORATION.

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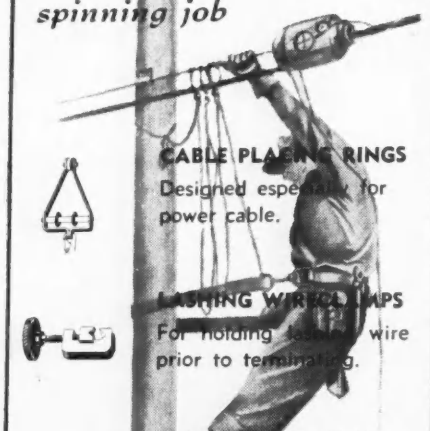

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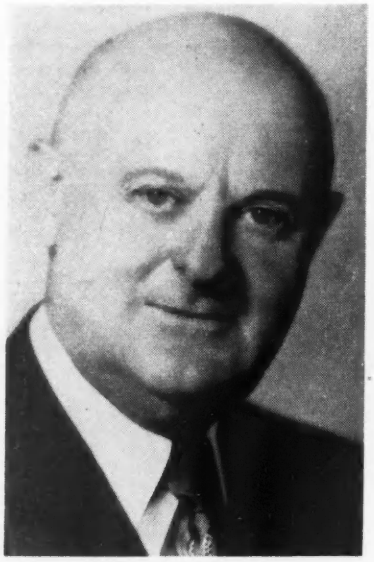
Burfeind Joins Two Firms As Telephone Consultant

LAST MONTH a veteran member of the Independent telephone industry, Raymond H. Burfeind was named telephone consultant for The Lindsay Telephone Supply Co., Cleveland, Ohio and Henkels & McCoy, Philadelphia, Pa. contracting and engineering firm.

Mr. Burfeind retired from Automatic Electric Co., on December 31, 1956 after 52 years of service. For



RAYMOND H. BURFEIND

the greater part of this period, he was engaged in sales work, and since 1948 he had special responsibilities in representing Automatic Electric at Independent telephone conventions.

Mr. Burfeind was already an experienced telephone man when he joined Automatic Electric as a designer in 1904. He served three years in patent and seven in engineering, where he participated in the planning of early dial exchanges and where he acquired broad experience with all phases of telephone equipment. In 1914 he entered sales as a district manager, and in 1916 originated the idea and sold the first group of unattended community automatic exchanges (CAX), thus starting a program of wide scale adoption of such equipment in rural exchanges throughout the country. Later he was placed in central office automatic dial equipment sales, and in this work, for nearly half a century, influenced the widespread sales of dial exchanges.

Mr. Burfeind was presented the Talbot G. Martin Award by the Strowger Automatic Club in 1942.

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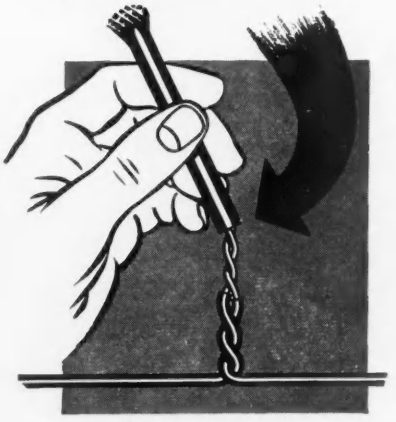
waterproof
...from
inside out!

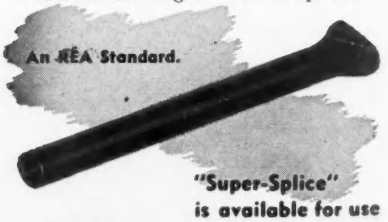


Superior Cable's exclusive economical "Super-Splice" is a plastic splice sleeve. It is sealed at one end and comes to you filled with an insulating and waterproofing compound.*

"Super-Splice" prevents leakage currents and breakdowns in the presence of moisture . . . good for 25,000 v. d. c.

Can be easily removed to re-enter the splice . . . the compound never hardens or oozes out no matter what the temperature.

**A Dow-Corning silicone compound.*



"Super-Splice" is available for use with straight, butt or bridge splices.

For further information on economical "SUPER-SPLICE", write

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Carolina Tel. & Tel. Names Fowler to Executive Post

THE APPOINTMENT of J. R. Fowler to the position of assistant secretary and assistant treasurer of Carolina Telephone & Telegraph has been announced by L. W. Hill.

A native of Burlington, N. C., Mr. Fowler had been district commercial manager of the telephone company's Fayetteville district.

Michael A. Higgins Dies

MICHAEL A. HIGGINS, an executive of the General Telephone System, died at St. Francis Hospital, Evanston, Ill. last month.

Born in Irvington, N. J. in 1898, Mr. Higgins received his early education in Newark and then attended Fordham University in New York City.

MICHAEL A. HIGGINS

He began his telephone career with the New York Telephone Co. and remained with the Bell System for the next 15 years.

In 1936, he joined the Gary Group of telephone companies (now part of the General Telephone System) serving first with the Illinois Central Telephone Co., Clinton, Ill., later coming to the Gary Group headquarters office, Chicago, where he was a vice president in charge of telephone companies operating in Illinois, Wisconsin, Minnesota, Iowa, Missouri, Nebraska, Georgia, and South Carolina.

He is survived by his widow, the former Vera Marion Barton of New York City, two daughters, Elizabeth and Mrs. Michele Cohig, and two sons, Robert and John.

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NEW PRODUCTS

TE&M's New Product Editor has selected items of particular interest to you at this time of the year. Complete data on each New Product may be obtained by using the Readers' Service Coupon you'll find on page 65.

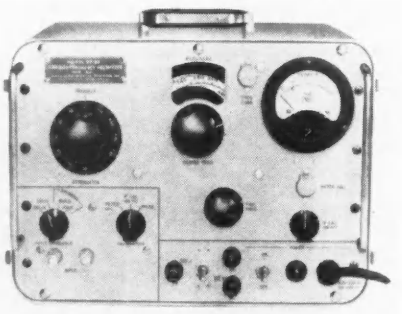
Truck Body

STAHL METAL PRODUCTS, INC., has recently introduced the Stahl "300" Light Line Construction and Maintenance Body. A rugged body, 112″ long, 1½-ton chassis and cab, the "300" is built for "all-weather" operation, providing generous storage space and special equipment as required. An additional model, the "300-A" fits 1½-ton or 2-ton chassis and measures 138″ long.

Shelves, bins and material trays are located for easy access and convenience. The "300" is built of cold rolled stretcher levelled auto body steel with special reinforcements at all points of strain. It is equipped with optional accessory equipment, including Hydraulic Pole Derrick. For complete data, *Check New Product*. 154.

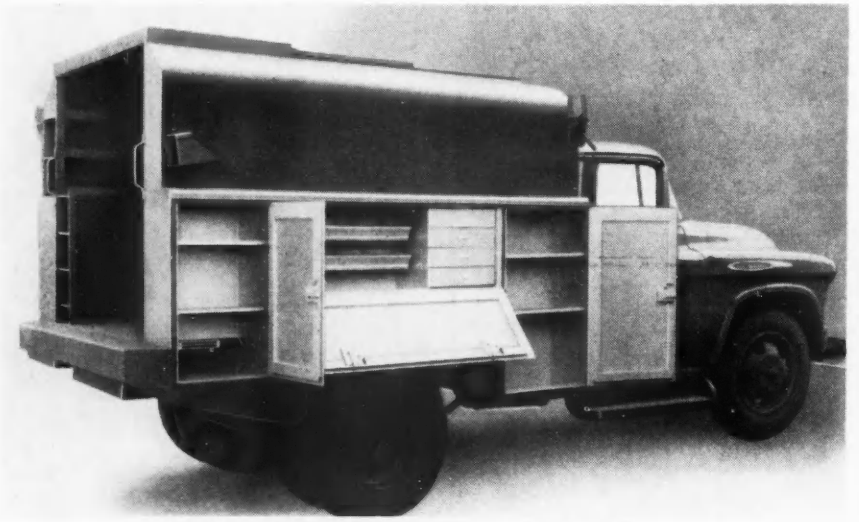
Wave Analyzer

MACK ELECTRONICS CF-83 is a precision harmonic wave analyzer capable of measuring the amplitude of signals and harmonics from 10 kc to 500 kc. It is essentially a highly tuned frequency selective detector designed for voltage measurements on carrier telephone systems as well as precise measurement of the harmonic content of various types of waveforms. The linearity of response is sufficient to permit measurements of harmonics at least 60 db below the fundamental. Its lightweight rugged construction makes possible precise measurements for field as well as laboratory use.



New wave analyzer.

This instrument features an exclusive precision Mack RF attenuator to insure accurate measurements down to the microvolt region. The tuning oscillator utilizes a precision tuning capacitor ruggedly mounted on an aluminum casting for high stability with rough usage. The oscillator is tuned over one range with 2½ feet of dial length for maximum ease of readability utilizing an exclusive Mack designed spiral dial and mask combination to allow visability to only that portion of the dial in use for least confusion to the operator. A rugged 12 to 1 anti-backlash gear reduction system allows for ease of tuning with no sacrifice in resetability. For complete data, *Check New Product* 155.



New construction and maintenance body.

New Pole Preservative

A NEW Penta formula known as "Woodtreat," and a different method application, that promises prolonged service life of poles and other standing wood structures, has recently been introduced by Wood Treating Chemicals Co.

Extensively tested in the laboratory and in the field under a wide range of temperatures and conditions, "Woodtreat" has been widely acclaimed for its superior penetrating qualities, its adaptability and for its exceptional ease of handling and economy.

Wood used in permanent installation, and in contact with the ground where it is subject to severe decay or termite attack, is normally preservatively treated by recognized standard methods other common solutions.

However, re-treatment of wood in place to extend useful service life has long been a problem because such treatments by brush or spray can only be superficial. Other soluble-in-water chemicals like sodium flouride, which must be handled with extreme care, may require wrapping after application, or are expensive to apply.

"Woodtreat" offers the solution to virtually all these deficiencies since it is safe, economical, easy to apply, requires no wrapping after application, penetrates deeply into the wood, and can give retentions of 6 to 11 times that of solutions applied by spraying or brushing.

Basically, "Woodtreat" is an oil-in-water emulsion consisting of approximately 87 per cent by weight of active fungicidal ingredients and 13 per cent special emulsifiers and water. The emulsion or bodied gel acts as a reservoir to feed into the wood a special aromatic petroleum containing 10 per cent by weight of Pentachlorophenol. Penta itself as a 5 per cent solution has come to be

recognized as an outstanding wood preservative, but the strength of the Penta is doubled in "Woodtreat."

"Woodtreat" has the appearance and consistency of mayonnaise, and a 1/16″ coating is equivalent to, or better than, 20 brush coats of a 5 per cent Penta solution. It may be readily applied as a band around wood poles at the ground line by the use of a wood paddle or by mechanical equipment, and requires no wrapping before back-filling.

"Woodtreat" is shipped in 8, 40 and 240 pound drums, and can be used throughout a wide range of temperatures. A comprehensive technical bulletin No. 1300 on "Woodtreat" is available. For your copy, *Check New Product* 156.

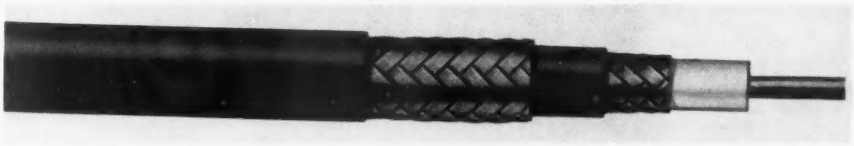
Coaxial Cable

RADIATION-PROOF coaxial cables one third smaller in size and proportionately lighter in weight than other electrically equivalent cables, and with 40 percent lower attenuation than RG 11/U type cables, have been developed as a new Series 'E' Cables by Times Wire & Cable Co.

The large savings in diameter size and the extreme low loss characteristics are attributed to the use of a new primary insulation, "Expanded" solid polyethylene dielectric. This patented new dielectric allows the use of a much larger center conductor than ordinary cables, fully protects the center conductor from temperature variances, and results in cabling with much lower capacitance and/or higher impedence as well as increased tensile strength.

The new Series E Cables were designed to meet MIL C-17B specifications. Compared to RG 8/U, 58/U, 11/U and 59/U type of cables Times' new Series 'E' Cables of similar physical characteristics have better electrical characteristics and lower loss. Where electrical characteristics are equivalent, a 33⅓% diameter and proportionate weight reduction is offered.

Both single and double shielded cables are available with either JAN type 2A non/contaminating, low temperature jacketing, or with Times' "Xelon" jacketing of non-contaminating, weatherproof, high molecular weight polyethylene, that has a tested life expectancy that is from 2 to 3 times that of vinyl jacketings.—*Check New Product* 157.



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ADVERTISING. Directories — *General Telephone Directory Co., 1800 Busse Highway, Des Plaines, Ill.*—[ADV. 1]

BELTS — CLIMBERS — COMPLETE LINEMEN'S EQUIPMENT, *W. M. Bashlin Co., Bashlin Bldg., Grove City 1, Pa.*—[ADV. 2]

BOOTHS—Acoustic Telephones — *Sherron Metallic Corp., 1202 Flushing Ave., Brooklyn 6, N. Y.*—[ADV. 3]

BORING MACHINES, EARTH — *Highway Trailer Co., Edgerton, Wis.*—[ADV. 4]

CORDS, Switchboard (with or without plugs), Instrument (retractable and regular) and Operators — *Commercial Cord & Supply Co., Inc., 26 Main St., Clifton Springs, N. Y.*—[ADV. 5]

CORDS, Switchboard & Telephone — *Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago 41, Ill.*—[ADV. 6]

PIPE PUSHERS — *Giant Manufacturing Co., South 6th St., at 12th Ave., Council Bluffs, Iowa.*—[ADV. 7]

POLES, Southern Yellow Pine — *Taylor Colquitt Company, 217 E. Main St., Spartanburgh, S. C.*—[ADV. 8]

POLES, Southern Yellow Pine — *Texas Creosoting Co., Orange, Texas.*—[ADV. 9]

PROTECTIVE EQUIPMENT — *Reliable Electric Company, 3145 Carroll Avenue, Chicago 12, Ill.*—[ADV. 10]—

REBUILT TELEPHONES & SWITCHBOARDS — *Telephone Repair & Supply Company, 1760 Lunt Avenue, Chicago 26, Ill.*—[ADV. 11]

WIRE, Insulated — DATED DROP WIRE — Neoprene or Weatherproof — *Alphaduct Wire & Cable Co., New Brunswick, N. J.*—[ADV. 12]

WIRE, Insulated Drop and Bronze of Copperweld — *Acorn Insulated Wire Co., Inc., 36 Freeman St., Pawtucket, R. I.*—[ADV. 13]

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CABLE SPLICERS, Station Installers, Equipment Installers, Linemen. Experienced men needed. Steady work, good pay. Henkels & McCoy, 1211 Kenmore Avenue, Elkhart, Indiana, or 6100 N. 20th St., Philadelphia, Pa.

PLANT ENGINEERS — For large Independent Telephone Company. Some experience necessary. In reply state age, educational and employment history. Address reply to Personnel Supervisor, Rochester Telephone Corporation, 10 Franklin Street, Rochester 4, New York.

HELP WANTED: Traffic Superintendent for operating company with over 100,000 telephones — 97% dial. 9 toll centers all with operator toll dialing. Subscriber direct distance dialing equipment to be placed in service at one toll center in July. State age and experience to: William C. Henry, Pres. & gen. mgr., Northern Ohio Telephone Co., Bellevue, Ohio.

WANTED:Men capable of retaining extraordinary positions with one of the industry's most progressive manufacturers. Liberal salaries plus benefits. Outstanding working conditions in new buildings. Associate with engineers known for notable contributions and achievements in the field of telephony.
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TEST ENGINEERS. E.E. or equivalent experience in telephone field. Test and evaluate new circuit and system engines. Prefer Test Engineering or Installation background. Opportunity to progress into Circuit Design or Project Engineering.
EXPERIENCED INSTALLERS. Installation experience or equivalent in testing or maintenance. Travel allowance plus expenses.
PROJECT ENGINEERS. Capable of directing crossbar projects. Act as coordinator of engineering, manufacturing and installation, plus customer contact. Strong telephony background essential with emphasis on circuits and equipment.
POWER EQUIPMENT DESIGNER. Design power equipment for automatic switchboards. Must have ability to design circuits as well as panels and cabinets.
For these and other rewarding careers "with a future" write to Personnel Department, Room 102, NORTH ELECTRIC COMPANY, GALION, OHIO.

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COMMUNICATION ENGINEER: With some experience in long distance telephone, telegraph or VHF radio systems and equipment for responsible position. Location, New York City. Salary $8,000 year. Send resume to: Supt. of Communications, New York Central Railroad, 466 Lexington Avenue, New York 17, N. Y.

WANTED: Manager for Telephone Cooperative operating 9 dial and 3 magneto exchanges. The three magneto exchanges plus two to be acquired will be converted to dial within the next two years. Salary according to ability and experience. State age, education, experience and business background. References desirable. Arthur S. Johnson, President; Northwest Mutual Aid Telephone Corporation, Ray, North Dakota.

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Rantoul, Illinois

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SITUATION WANTED: Telephone Plant Engineer. Familiar with both R.E.A. and BELL SYSTEM Phases of operation. South Preferred. WRITE: Carl Saine, C&P Telephone Co., Portsmouth, Virginia.

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FOR SALE: Stromberg-Carlson, Type 3 toll switchboard, 24 single positions, with 2 panel sections, cord circuits B-34630, to be superseded with direct distance dialing at Medina, Ohio toll center.

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Refinished and tested, with condenser — $6.00 each.

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FOR SALE

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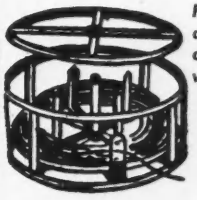
LEICH. #901—1600—2500 Ohm	@	$21.45 Ea.
WESTERN. #302 EW. Desk	@	$14.00 Ea.
MONOPHONES. Type 40, Manual	@	$13.50 Ea.
LEICH. #601-A. Manual	@	$13.00 Ea.
SUBCYCLE. MODEL B. Heavy Duty	@	$30.00 Ea.
SUBCYCLE. MODEL M.7.5. Light	@	$20.00 Ea.

QUOTATIONS.
F.O.B. CHICAGO, ILL.

INDEPENDENT TELEPHONE REPAIR CO.
2137 West 21st St. Chicago 8, Ill.



For illustrated literature on this payout, take-up wire reel, write

Whitaker Reel Mfg. Co.

P. O. Box 1318
MONROE, LOUISIANA

FOR SALE

400 Line, W. E. Common Battery Switchboard and Complete C. O. Equipment. Equipment is approximately nine years old. It was cut out of service a few months ago.

Can be purchased at Low Reduced Price.

Write W. J. Holladay, Gen. Mgr.,

ALABAMA TELEPHONE CO.,

Fayette, Alabama

FOR SALE: Completely converted exchange — A/E Type 11 CAX 2-5 numbering, all new telephones, 150 stations. Selling to settle estate. Contact Mrs. Harry Eaton, owner Helix Telephone Company, Helix, Oregon.

FOR SALE

1 51 Pr., Type S-6, Cook Cable Terminal, equipped with wood fuses, protectors, and 7½′ stub	$ 35.00
50′ 51 Pr. 22 Ga. Braided Switchboard Cable	$ 10.00
60′ 16 Pr. 24 Ga. SWP Lead Cable	$ 10.00
71′ 16 Pr. 22 Ga. SWP Lead Cable	$ 17.00
200′ 16 Pr. 19 Ga. SWP Lead Cable	$ 65.00
263′ 16 Pr. 19 Ga. SWP Lead Cable	$ 85.00
575′ 101 Pr. 26 Ga. Pulp Lead Cable	$342.10

Above material new and priced f.o.b. St. Louis

T. L. Leonard Electric Co.
4 North 8th Avenue
St. Louis 1, Mo.

FOR SALE

Prompt Delivery

NORTH ELECTRIC #7H6 Common Battery Self-contained Handset Cradle Telephones with Dials or Dial Blanks, available with Straight Line or Harmonic Ringers.

LEICH #601 Common Battery Self-contained Handset Cradle Telephones with Straight Line Ringers.

225,000 ft.—ARMORED SUBMARINE CABLE — single conductor Navy code No. 15C-1251, on 14,000 ft. reels. The conductor is 10 gauge stranded copper encased in rubber with an outer coating of Phoxel. The armor is #12 galvanized steel wire with jute impregnated jacket. Samples on request.

100 miles—WD1A TELEPHONE WIRE — Army Surplus — Neoprene jacketed — on one-mile non-returnable reels.

20,000 ft.—WEATHERPROOF jacketed DROP WIRE — #17 Bronze twisted pair, 1000 ft. coils, original wrap.

75,000 lbs. — GALVANIZED STEEL LINE WIRE, slightly undersized. Can be spliced with Reliable 12-C-2 or Nicopress 2-102-C Sleeves. Resistance is 90 ohms per loop mile. Breaking strength equal to 12-85 Steel Line Wire. Samples on request.

120 reels—NEOPRENE JACKETED TELEPHONE CABLE — 5 pair 19 gauge. Suitable for aerial or direct burial installation. In continuous lengths of 1000 feet on non-returnable reels.

100 reels — "SPIRAL FOUR" Army TELEPHONE CABLE — 2 pair 19 gauge Neoprene jacketed Continuous lengths of approx. 1320 ft. on "no charge" reels.

20,000 ft. — DROP WIRE — #17-2 twisted pair, hard drawn Copper, Neoprene insulated. Packages in approx. 1000 ft. coils.

30,000 ft.—7 pair Double Paper Wrap #19 gauge LEAD COVERED STEEL TAPED PARKWAY CABLE on W.E. Steel Reels of overage length of approximately 2500 feet per reel.

WRITE OR PHONE FOR PRICES AND QUANTITY DISCOUNTS

TELEPHONE REPAIR & SUPPLY CO.

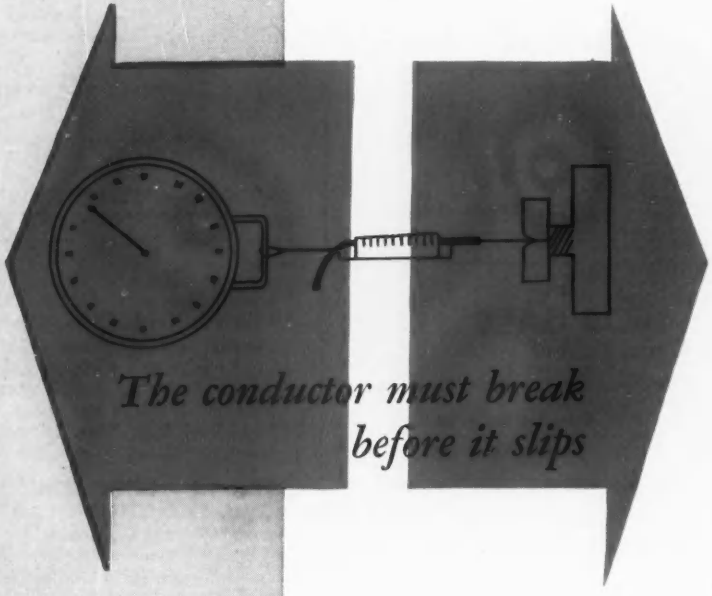
1760 W. Lunt Ave., Chicago 26, Ill.

Dan McNulty

Phone ROgers Park 4-3817

ALPHADUCT

P clamp adhesion test



The conductor must break before it slips

P clamps are the most widely used method of attaching drop wire to buildings. Lest you may worry about a P clamp causing slipping of the insulation or jacket on Alphaduct Neoprene Jacketed Drop Wire — read about this Alphaduct service test. This test is made daily.

A sample of Alphaduct wire is inserted in a P clamp with 12 inches of the wire projecting from the top of the clamp. The bail of the clamp is then inserted in the upper jaws of a tensile testing machine, and the end of the wire is stripped free of jacket and insulation and inserted in the other end of the machine.

The jaws of the machine are then gradually separated until the conductor breaks. The conductor must break before there is ANY slipping of either the jacket or the insulation.

Don't have any worries about a little old P clamp hurting ALPHADUCT drop wire. Try Alphaduct. It's dated by a color coded thread so you can see for yourself how long it lasts, how much money it saves.

ALPHADUCT WIRE AND CABLE COMPANY • NEW BRUNSWICK, N.J.
NATIONAL DISTRIBUTORS • AUTOMATIC ELECTRIC SALES CORP., CHICAGO, ILLINOIS • LEICH SALES CORPORATION, CHICAGO, ILLINOIS. REGIONAL DISTRIBUTORS • PANKEY SUPPLY CO., CHARLOTTESVILLE, VA. THE LINDSAY TELEPHONE SUPPLY CO., CLEVELAND, OHIO.

Lenkurt Adds Engineer To Carrier-Microwave Staff

ARTHUR N. CLARK, telephone engineer with 20 years experience in the industry, has been named by Lenkurt Electric Co. as manager of government and industrial commercial relations in the central states.

He is one of three engineers recently added to the firm's carrier and microwave commercial staff. The others are Radio Engineers William

ARTHUR N. CLARK

Nielsen and Robert T. Murphy, both appointed as commercial representatives.

Clark as a sales engineer with Motorola prior to his move to Lenkurt. His previous experience includes appointments as senior engineer, district manager and division manager with Kellogg Switchboard & Supply Co., and as engineer with Interstate Telegraph. He also had 15 years in transmission work with the Bell System. Clark has the B. S. in electrical engineering from McKinley-Roosevelt Foundation, Chicago, and pursued additional study at Northwestern University.

Nielsen joined Lenkurt after six years with Philco, where he held positions as technical representative, project engineer in the Government & Industrial Division, European microwave coordinator and regional sales engineer.

Murphy also was with Philco for six years. As a microwave field engineer in the Government and Industrial Division, he conducted microwave surveys and supervised systems installations. He has the B.S.E.E. from the University of Notre Dame, and is a member of the IRE.

AUTOMATIC ELECTRIC TOPICS

JUNE 1957
VOLUME 21
NO. 12

From Research Conferences Come the Ideas that Are Worked Out on the Drawing Board and Presented to You as New Products (see next page)

THE Independents' TELEPHONE LABORATORIES

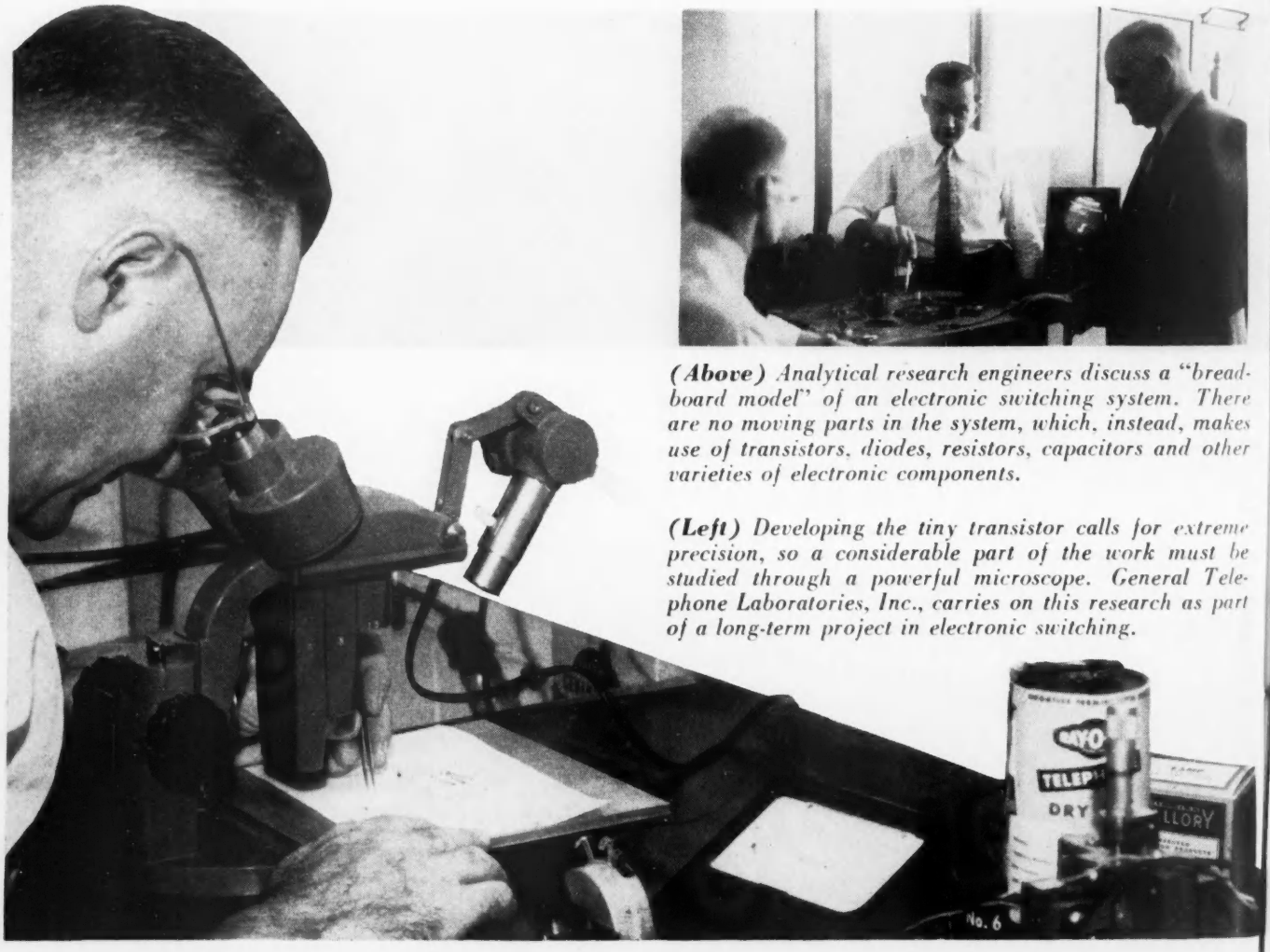
Sixty-five years ago, an Independent manufacturer scooped the world by developing a practical automatic dial telephone system. Independent telephone men became the first customers of the new "Strowger Automatic Telephone Exchange," and as the industry grew, they got into the habit of bringing their problems to the creators of dial telephony.

So the little laboratory that produced the first Strowger exchange has now grown into an organization of almost two hundred people, known as General Telephone Laboratories, Inc. Through the sixty-five years of its history, this organization has contributed a steady stream of new developments to the telephone field. Now bigger and better than ever before, it will continue to keep the Independent telephone industry abreast—and ahead—of all service needs.

These pages show some of the men of the Laboratories —and some of the things they do.

***(Above)** Analytical research engineers discuss a "breadboard model" of an electronic switching system. There are no moving parts in the system, which, instead, makes use of transistors, diodes, resistors, capacitors and other varieties of electronic components.*

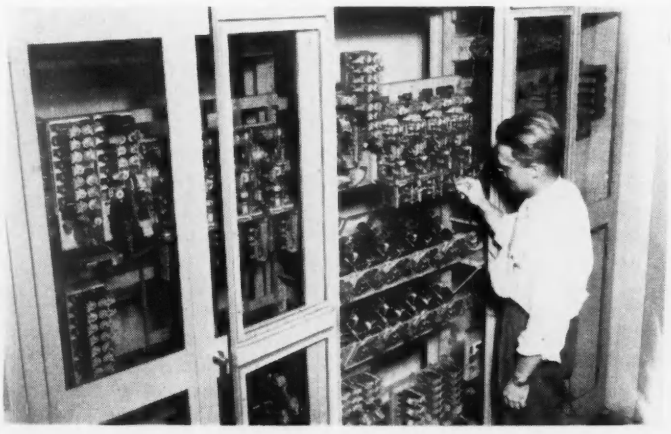
***(Left)** Developing the tiny transistor calls for extreme precision, so a considerable part of the work must be studied through a powerful microscope. General Telephone Laboratories, Inc., carries on this research as part of a long-term project in electronic switching.*



The telephone field offers challenging opportunities for research and design engineers. And with all the developments of recent years, the opportunity is now greater than ever!

General Telephone Laboratories sets up its own testing equipment and procedures for accurately assaying the effect of every factor in design of communications equipment.

A demonstration of the first sample of the "Detrel" Detector for Strowger Automatic Toll Ticketing shows how 50 lines are concentrated in this narrow width. The new detector provides automatic terminal number detection up to ten lines, as opposed to the previous maximum of five lines. Such research as this confirms the basic flexibility of SATT for almost any conditions of nationwide toll dialing.



***(Left)** Life tests of Automatic Electric equipment are constantly being made by General Telephone Laboratories. Strowger switches are sent up and around; telephone cords are kinked and straightened; dials are spun as much as 3½ million times (equivalent to 192 years use in the field)—all to improve performance. Different materials and designs of parts are compared—and under different operating conditions—to find the most practical and longest-lasting components under all conditions.*

It's All Strowger
For West Branch Bell Telephone Company

W. A. Smith, President, West Branch Bell Telephone Company, shows the confidence and elation of a telephone man "gone Strowger." Mr. Smith is one of the original directors of the company, which was founded in 1910.

Since February 16, 1957, the West Branch Bell Telephone Company, of Muncy, Pennsylvania, has been 100% Strowger Automatic in all five of its exchanges. That's the day the Hughesville exchange was converted to dial.

Plans for cutovers to dial were begun in 1948, and the first installation was made at Montgomery in 1950. Cutovers followed at Muncy, Turbotville, Watsontown and, finally, Hughesville. The five offices have a total of 2,100 lines and serve 6,750 stations. Hughesville also serves Picture Rocks—which formerly had its own manual exchange.

With "2-5" selectors, all these exchanges are equipped to provide intertoll dialing whenever the Bell exchange at Williamsport gets the necessary equipment—expected for 1960.

The West Branch Bell Company had its beginning in 1910, when a group of citizens from several communities in east-central Pennsylvania, along the west branch of the Susquehanna River, met to seek means for better telephone service in the area. One of the original directors, W. A. Smith, is now president of the company; Ralph A. Decker is manager and treasurer. Five modern buildings—housing the best in dial equipment—testify to the continued progressive ideals of the management.

There's no pause for poses when cutover time draws near. All "hands" are on the job, making final connections on the main frame so those Strowger switches will be clicking on time. That's Otto Kilgus, Plant Superintendent, in center, and Automatic's installer Harry Kosko at telephone.

Linden, California

Still More Cutovers-- To SATT and Strowger

Pandora, Ohio

***Community Telephone Company** cut over its Pandora, Ohio, exchange to 200 lines (200 terminals) of Type 11 M-A-X Strowger Automatic equipment February 26. The dial equipment replaces manual operation and provides for extended-area service with nearby Gilboa.*

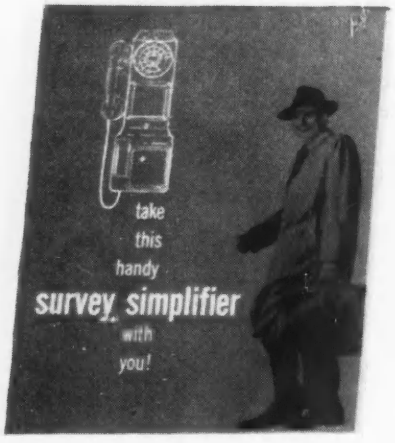
(Inset) Pandora's Mayor James Sommers gets next to his task as he is given the honor of placing the first call over the new equipment.

It's Strowger Automatic Toll Ticketing for Linden, California—the first of Type C SATT systems to be installed. (With this system, the subscriber dials *his own* number as well as the number he's calling, so it isn't necessary to provide equipment to automatically identify the calling station. Naturally, this makes a simpler system—ideal for medium sized exchanges such as Linden, which is 180 lines.) The three SATT ticketers pictured in foreground collect data needed to bill toll calls—calling number, called number and length of conversation. In all, there are seven ticketers included in the Linden equipment. (There is a SATT system for *any* size exchange.) Enjoying the performance of the ticketers are Dave Miller, President of the Linden Chamber of Commerce; Lloyd Aldrich of Central California Telephone Company, and Automatic's A. A. Johnson. With the Type C SATT, cut over March 30, Linden subscribers may dial direct to 20,000 telephones in the Stockton area of the San Joaquin Valley. And the Type C equipment (like *all* SATT systems) is easily adaptable to nationwide Direct Distance Dialing. When Bell system facilities in Stockton are ready for DDD—which is expected to be some time this summer—Linden subscribers will have dial access to 20,000,000 telephones in the United States.

Launch Your 'Summer Offensive' Now

Is there a summer slump in your business? Then, now is the time to build "extra service" revenue. Top off the bread-and-butter single station and toll revenue by selling extensions, automatic answering devices, colored telephones, P-A-B-X systems, and the many other telephone conveniences. More and more subscribers are becoming interested in the extra advantages of these telephone services.

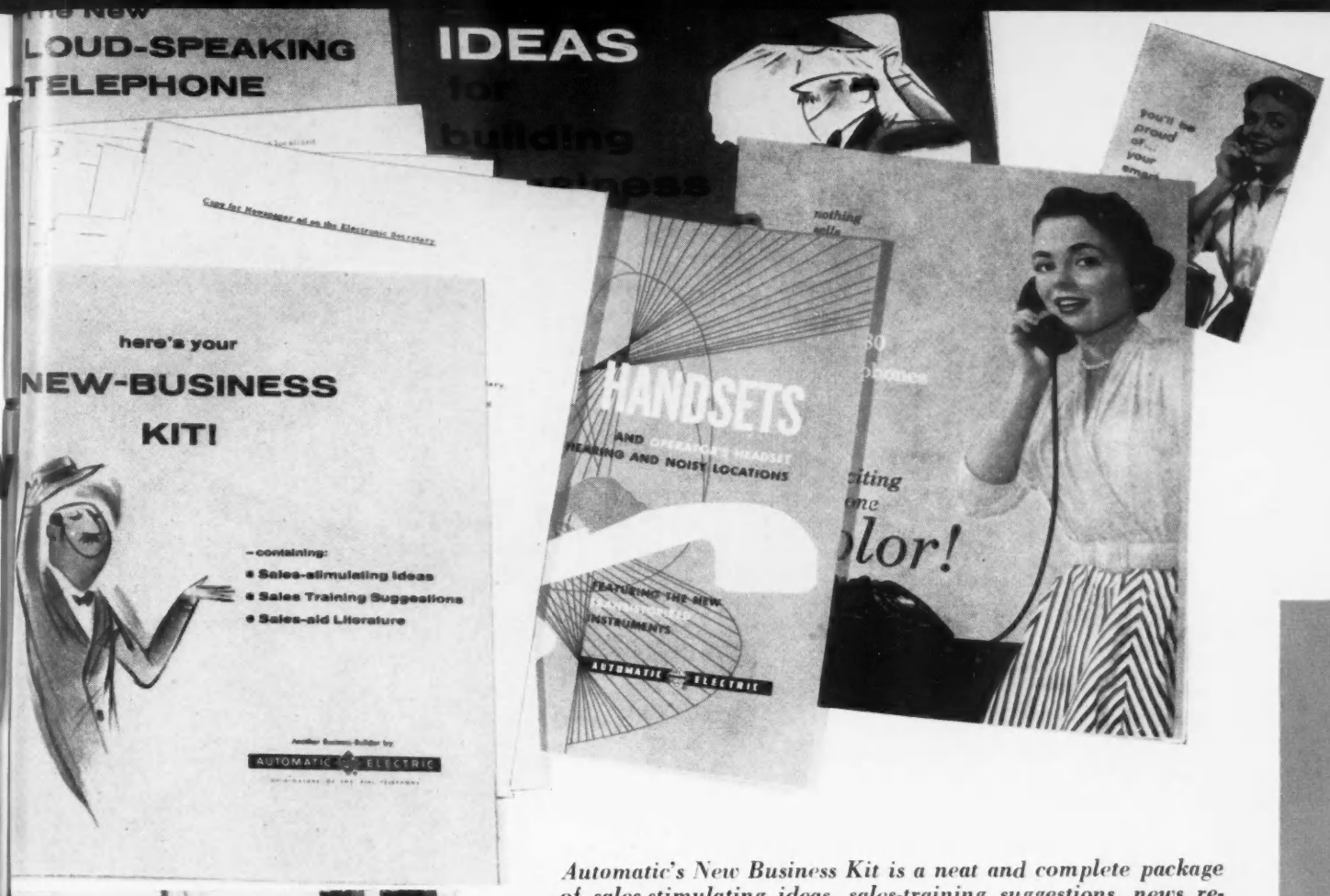
To help you reach and sell prospects, Automatic Electric has a wide range of sales aids. A few are pictured here. These are available at no cost to you. But, no matter what the selling problem, we will be glad to help. A good start on your "summer offensive" would be to send for the handy order blank for sales aids, or for any of the material listed here. Why not write, today?



More outdoor recreation and travel in summer mean more paystation activity. The Survey Simplifier helps you spot the best locations. A companion piece, "How to Make Paystations Pay in Your Area," shows you how to promote business.

you'll be proud of... your smart new
two tone color telephone!
your telephone is SEEN as well as heard
day-brighteners
for home and office

Summer is a natural for selling color. And colored telephones mean more extensions, too. Circulars and bill inserts will help your salesmen. Don't forget the miniature telephones in color, too. These little duplicates of the real thing make attractive diplays. We have word that employees of operating companies are even having these model sets made into pen holders, music boxes, etc.



Automatic's New Business Kit is a neat and complete package of sales-stimulating ideas, sales-training suggestions, news releases and sample advertisements—a merchandising must!

Your business subscribers will appreciate the convenience of a P-A-B-X system all year 'round. Let us know the number of inside lines required and we'll send you the appropriate circular to help you sell the prospect. Or, ask for our P-A-B-X Sales Kit.

It's our business to help you in your business, and here's a handy little guide we've prepared to help you build better displays for the lobby, business offices, display windows, county fairs, etc. The "Do-It-Yourself" Sketch Book shows how to prepare displays at little cost.

MEMO

Dear Harry,

Just stopped by the office of Bob Fields, the real estate and insurance man. Boy, is his new secretary a knockout! Bob tells me she really handles the office well, too. That's quite a combination--beauty and efficiency.

Finally, I got around to asking him how his other "secretary" was doing--his Electronic Secretary. Well, he is just as pleased with that. He tells me the first thing he did when it was installed was to tell all his customers and friends about it first time he saw them. Since then, they've been calling at any hour of the day. (Sometimes his secretary has to be out of the office the same time he is, and then the "machine" secretary takes over-- as well as after hours.)

Bob says the Electronic Secretary has been a real business-getter for him, because he's really told the world about it. Beside telling his friends and customers, he's used bill inserts, and incorporated information on the telephone answering service into his newspaper, radio and television advertising. He even mentioned it on his letterhead. He's received quite a few compliments on the convenience--as well as new business.

Seems as though this would be a good idea to pass on to our other subscribers who are prospects for the Electronic Secretary. Let's show them how to promote it for greatest results. Suggest that they take every opportunity to explain it to their customers. That way, both we and our subscribers will benefit-- for years.

Think I better be over again soon and see how both secretaries are doing?

Dave

This secretary is quite a beauty, too.

Published by

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A member of the General Telephone System - One of America's great communications systems

GENERAL TELEPHONE SYSTEM

Chicago, U.S.A.

John Sharkey, Editor

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CONTACT BURNISHER
FOR USE ON ANY TYPE CONTACT

- No residue.
- No filings—no grit or dust no film.
- Economical—flexible—insulated.
- Each one comes in vinyl case.
- Balanced—length 3", 2" blade, 3/16" wide x .007" thick.

SAMPLE TRIAL PKG. OF 10—$3.50. 50 TO 950—24c each.
PROMPT SHIPMENT
P. K. NEUSES, INC.
1205 W. Euclid Ave., Arlington Heights, Ill.

Shield Yourself Against Chiggers & Ticks!
Ticks-Off repels and kills disease-carrying insects—ticks, chiggers, mosquitoes, black flies, many others. Fights Rocky Mountain Spotted Fever, Tick Fever, Rabbit Fever, etc. Used by U. S. Armed Services; U. S. and State forestry, wildlife, conservation depts.; outdoorsmen coast to coast. Lightly mist clothes and skin for all-day protection.
America's No. 1 Spray-On Insect Repellent

MINE SAFETY APPLIANCES CO.
54 Branches Everywhere
Home Office: Pittsburgh 8, Pa.

Whether a Winch Line Hook or a complete Line Body check your requirements with

UTILITY TOOL & BODY CO.
CLINTONVILLE, WISCONSIN
UT & BCo

UNITED UTILITIES, INCORPORATED
49th Consecutive Dividend

The Board of Directors declared a quarterly dividend of 30 cents per share on the outstanding common capital stock of the company, payable on or before June 29, 1957, to stockholders of record at the close of business June 7, 1957.

Abilene, Kans.
April 9, 1957

ALDEN L. HART,
President

THE BACK OF THE BOOK

By JOHN G. REYNOLDS

"Man's Best Friend"

IN Switzerland the telephone is rapidly taking its place as "man's best friend."

A pregnant woman can dial 11 to get the name of the nearest midwife.

A businessman can dial 11 to find out the arrival and departure of trains and intercity buses.

On election and referendum nights — and there are on an average of four a month — the Swiss can dial 11 for the results.

Skiers can dial 11 for the latest snow reports in their favorite mountain resorts.

"Eleven" will perform secretarial services practically for free. You can leave a message with "11" to be relayed to your party at the specified hour on the requested date. The sender's charge for this service is only 13 cents in the city and 25 cents elsewhere in the country. The receiver pays another nickel.

"Eleven" will wake you in the morning, take your calls and relay your messages if you leave home or office. "Eleven" will tell you the program and show times at movie houses and theaters.

In case of an accident "11" will advise the nearest auto repair club and in case of snow slides will send the nearest avalanche dog to the rescue.

Melodies By Phone

OUR EASTERN correspondent tells us the Japanese, "at long last, have brought the juke-box to the telephone — a wedding that promises to be at least as momentous as that of ice cream and flavored soda water."

The invention came to light at the recent World Trade Fair. The device looks like the base of a desk telephone, with a cradle to put the receiver on.

Here's the way it works, according to the pamphlet prepared by the Japanese firm: "*When a man rung up is not found near the telephone and must be sent for, or when something urgent renders it impossible for you to respond to the telephone call at once, just put your receiver on this machine, and an orgel (sic) will start playing music automatically sending out a sweet melody to the ear of the man who gave you a ring but is kept waiting and impatient to talk.*"

Harassed and raspy business men will agree it's unpleasant to be kept waiting on the phone, particularly, as the pamphlet says, "*when one is busily occupied on account of the pressure of work.*"

In the inscrutable way that Japanese wordsmiths have with the English language, it adds: "*Such unpleasantness can easily be dispensed with and services to important clients can be decidedly improved upon by use of our subject machine which will bring to the ear of the man, impatient to talk over the phone but is kept waiting, with music, thus killing his impatience.*"

The melody to be tinkled in your ear to slaughter impatience should be carefully selected: "We have several tunes already prepared for use with our machine."

As listed, they include such as: Lake of Swan, Danube Wave Waltz, Kojo No Tsuki, Tennen No Bi, Home on the Range, Cradle Song of Schubert, Kuroda-Bushi, Sado-Okesa, and Oedo-Nihonbash.

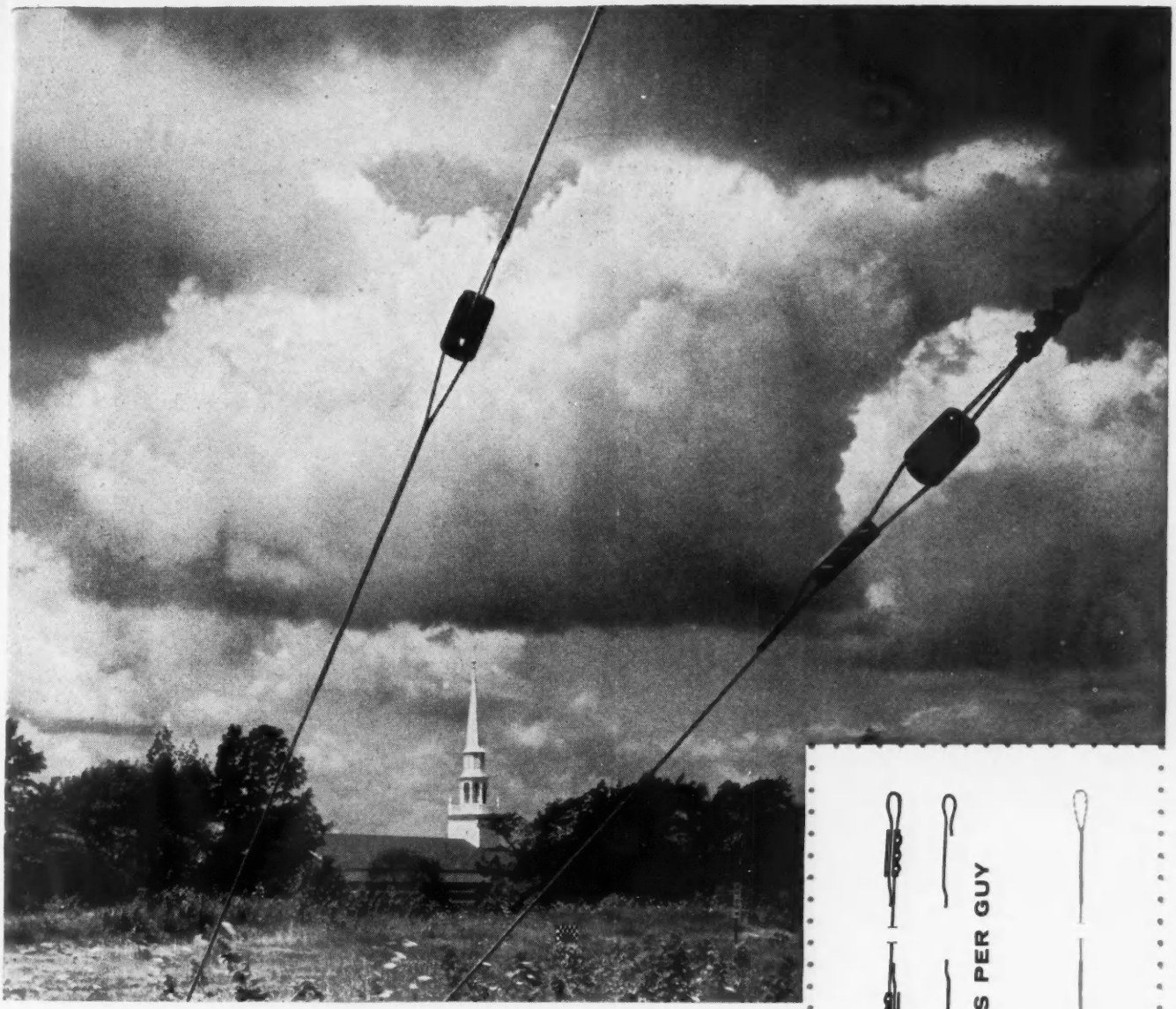
Well, the concept is certainly a brave one. Whether "Lake of Swan" blurted from a receiver will have sufficient charm to soothe the savage beast of a quivering executive who has been told to wait is something that will bear watching.

No Small Job

WHEN telephone equipment does go wrong it isn't satisfied with anything less than a king-size job. At least you might read that moral into a recent United Press story from Connecticut.

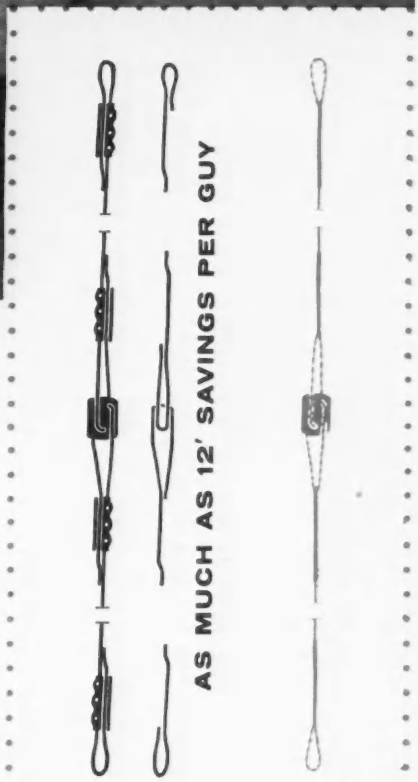
There somewhat bewildered telephone men are chasing a "bug" in the direct dialing system that has been giving callers Anaheim, Cal., instead of Hartford, Conn.

STOP DRIBBLING AND SHOOT!



Up to 30% savings in strand... with PLP Guy-Grip Dead-Ends

You will find real guying economy with PLP Guy-Grip dead-ends. Because they eliminate strand looping, you can use *shorter, straight* lengths of guy strand. This means as much as 12 feet savings in strand per guy. What's more, the finished installation is neat, streamlined, efficient.



PX-80

Made in accordance with or for use under U. S. Patent No. 2,761,273; other patents issued and pending.

PREFORMED LINE PRODUCTS CO.

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DEPT. NO. TR1A
Telephone: Cleveland EXpress 1-3571

Compare the fast, easy Nicopress Line Splice with older methods . . . just do this

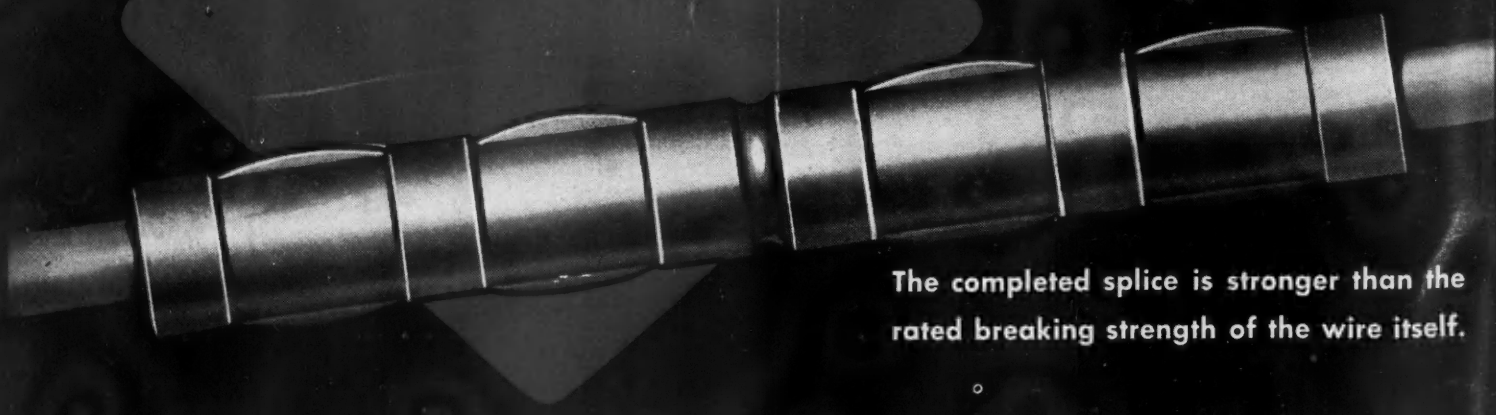
1 CLEAN ENDS OF WIRE

2 INSERT WIRE IN SLEEVE

3 COMPRESS WITH THE EASY TO HANDLE *Nicopress* TOOL

Ask Your Jobber

and you get this



The completed splice is stronger than the rated breaking strength of the wire itself.

The National Telephone Supply Company

5100 SUPERIOR AVENUE • CLEVELAND 3, OHIO

Canadian Mfr.—N. SLATER CO., LTD., HAMILTON, ONT., CANADA

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